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ABSTRACT

These proceedings include the agenda of the conference, a list of its cosponsors, and the texts of the following six papers presented at the conference: "Hepatitis Vaccine: Are Health Occupations Education Students Protected?" (Cynthia Chappelka); "Integrated Academics: An HOE Model" (Karen E. Gable, Beverly Ransdell); "The Ability of Work Related Rewards to Predict the Organizational Commitment of Marketing Education and Health Occupations Education Teachers" (Beverly Richards, Terrance O'Brien, Duane Akroyd); "Bridging the Gap between Training, Testing, and Employment" (Fred W. Reneau, Jacquelyn King); "Assessment of Computer Use by Health Occupations Teachers in Florida" (Janice R. Sandiford); and "Effectiveness of Satellite Programs for Technical Updating of Vocational Education Teachers" (Larry Hudson et al.). Several papers include substantial bibliographies. (MN)

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FIFTH BIENNIAL NATIONAL
HEALTH OCCUPATIONS EDUCATION
RESEARCH CONFERENCE

PROCEEDINGS

Edited by

Chet Rzonca

College of Education

The University of Iowa

Iowa City, Iowa 52242-1529

FIFTH BIENNIAL NATIONAL HEALTH OCCUPATIONS EDUCATION RESEARCH CONFERENCE

December 1, 1993
Kentucky Ballroom
Embassy Suites Hotel
Nashville, TN

8:30 - 9:00 a.m.	Coffee
9:00 - 9:30 a.m.	Discussion to Choose Sunday Morning Presentations
9:30 - 10:15 a.m.	**Hepatitis Vaccine: Are Health Occupations Education Students Protected?** Cynthia Chappelka, R.D.H., M.Ed. Virginia Polytechnic Institute and State University Blacksburg, VA
10:15 - 10:30 a.m.	Break
10:30 - 11:15 a.m.	**Integrated Academics: An HOE Model** Karen E. Gable, Ed.D. Indiana University, Indianapolis, IN Beverly Ransdell, BA Arsenal Technical High School, Indianapolis, IN
11:15 - 12:00 noon	**The Ability of Work Related Rewards to Predict the Organizational Commitment of Marketing Education and Health Occupations Education Teachers** Beverly Richards, D.Ed., RN Terrance O'Brien, Ph.D. Duane Akroyd, Ph.D., RT(R) North Carolina State University, Raleigh, NC
1:15 - 2:15 p.m.	**National Consortium on Health Science Technology Education** Nancy Raynor North Carolina Dept. of Public Instruction, Raleigh, NC Beverly Campbell California Department of Education, Sacramento, CA
2:15 - 3:00 p.m.	**Bridging the Gap Between Training, Testing, and Employment** Dr. Fred W. Reneau Dr. Jacquelyn King Department of Workforce Education and Development Southern Illinois University, Carbondale, IL
3:00 - 3:15 p.m.	Break

3:15 - 4:00 p.m.	**Assessment of Computer Use by Health Occupations Teachers in Florida** Janice R. Sandiford, Ph.D. Florida International University, Miami, FL
4:00 - 4:45 p.m.	**Effectiveness of Satellite Programs for Technical Updating of Vocational Education Teachers** Larry Hudson, Ph.D. Richard Dietzel, Ed.D University of Central Florida, Orlando, FL Janice Sandiford, Ph.D. Florida International University, Miami, FL Dan Morris, Ph.D. Florida Atlantic University, Baco Raton, FL
4:45 - 5:00 p.m.	Evaluation and Selection

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FIFTH BIENNIAL NATIONAL HEALTH OCCUPATIONS EDUCATION RESEARCH CONFERENCE

December 1, 1993

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HEPATITIS VACCINE:

ARE HEALTH OCCUPATIONS EDUCATIONS STUDENTS PROTECTED?

Cynthia Chappelka

Vocational and Technical Education

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HEPATITIS VACCINE:

ARE HEALTH OCCUPATIONS EDUCATION STUDENTS PROTECTED?

Cynthia Chappelka

ABSTRACT: The OSHA regulations of 1992 require that employees in health care facilities at risk of bloodborne pathogen exposure be provided the hepatitis vaccine at no charge. Students in health occupations education are not covered under these regulations even though they are at risk. Little is known if students are being protected during their programs of study. In order to establish baseline information, a survey was conducted to identify if the licensed practical nursing programs in Virginia had in place policies and procedures for students to obtain the hepatitis vaccine. Findings indicate that 63% of the responding programs have a hepatitis policy and 47% of the programs have 80% or more of their students protected by the hepatitis vaccine. A recommendation is that all states determine if their health occupations education students are protected with the hepatitis vaccine.

Cynthia Chappelka, R.D.H., M.Ed., Health Occupations Education Teacher Educator, Vocational and Technical Education, College of Education, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0254

Introduction

The Occupational Safety and Health Administration (OSHA) has mandated regulations to protect any employee at risk for exposure to bloodborne pathogens (Department of Labor, Occupational Exposure to Bloodborne Pathogens; Final Rule, 1991). These include universal precautions/body substance isolation, handwashing controls, personal protective equipment, hepatitis B immunization provided at no charge to the employee, training and engineering and work practice controls (West Virginia Department of Education, Exposure Control for Blood and Other Potentially Infectious Material: A Protocol Cocument for Health Occupations Education Programs in West Virginia, 1992).

A variety of harmful microorganisms may be transmitted through contact with infected blood, but the risk of contacting hepatitis is the greatest. (West Virginia Department of Education, Ibid) Every year approximately 300,000 persons in the United States are infected with the hepatitis virus (HBV). Of these, 25% become ill with jaundice. More than 10,000 require hospitalization and 250 die of the disease. (Office of Health Compliance, OSHA Instruction CPL 2-2.44C), 1992). OSHA estimates that occupational exposures account for roughly 5900 to 7400 cases of HBV infection each year (West Virginia Department of Education, Exporsure Control for Blood and Other Potentially Infectious Material: A Protocol Document for Health Occupations Education Programs in West Virginia, 1992) Between 6-10% of those who become ill with hepatitis become "carriers", where although the "carrier" is not ill, that person can transmit hepatitis to another person. Hepatitis carriers are at risk for cirrhosis of the liver and primary liver cancer. An estimated 4000 persons die each year from cirrhosis related to hepatitis B infection and more than 800 die from hepatitis B-related liver cancer. (Office of Health Compliance Assistance, OSHA Instruction CPL 2-2.44C), 1992). Employees in medical and dental facilities are at risk to be exposed to HBV. Students in health occupations educations (HOE) who gain clinical skills and practice in clinical settings are also at risk to contract hepatitis-B. It can be argued that students are more at risk because of their lack of experience.

OSHA regulations require that the employer protect the employee in the clinical setting at risk for exposure. These regulations do not address students (West Virginia Department of Education, Exposure Control for Blood and Other Potentially Infectious Material: A Protocol Document for Health Occupations Education Programs in West Virginia, 1992). Therefore, it becomes the responsibility of the health occupations education leadership and HOE teachers to ensure that students are protected from bloodborne pathogens such as hepatitis. The best prevention against HBV is the hepatitis vaccine which is provided at no charge to employees following OSHA regulations. Again, this regulation does not include students. The vaccine is expensive costing approximately $130 for the series of three injections. This high cost can discourage students and sometimes teachers from advocating and implementing its use. However, hepatitis is such a potentially serious disease that it needs to be determined if students are receiving the hepatitis vaccine and, if they are not, to begin education and other procedures to ensure that programs have a formal hepatitis policy and that students are receiving the hepatitis vaccine.

The Health Occupations Education leadership in Virginia has been concerned about hepatitis risks for students and have had seminars for HOE teachers. Students also have had workshops at both Health Occupations Students of America (HOSA) regional meetings and the HOSA state leadership conference. It was decided to survey the directors of the licensed practical nursing (LPN) programs to determine:

1. if the programs had a formal hepatitis policy
2. who was responsible for payment of the hepatitis vaccine
3. where students obtained the hepatitis vaccine
4. what percentage of students received the vaccine
5. if there were proposed changes in the hepatitis policy
6. future plans for programs not currently having a hepatitis policy
7. identification, both present and future, of clinical sites that required students to have the hepatitis vaccine

The 41 LPN programs were chosen out of Virginia's total health occupations education programs because LPN students are most at risk and it is a smaller group to survey in answering the research questions.

Methodology

All the directors of the 41 licensed practical nursing programs that are the responsibility of the Virginia Department of Education were mailed the survey. The names and addresses were chosen from the The Directory of Virginia's Health Occupations Education Personnel (Virginia Department of Education, 1992-1993).

Population

Thirty five of the 41 licensed practical nursing programs are 18 months high school extended programs. The first year students are seniors in high school. Adults are admitted into the programs if there are not enough seniors to fill a class. The second year all students are postsecondary students, with the programs the responsibility of the local school district, or school districts. However, in some cases, the entire program is hospital based. Five of the 41 programs are one year adults only programs but still under the auspices of a school district(s). All of these programs are hospital based. One school system has both a 18 months high school extended program and a one year adult program.

Instrumentation

The survey instrument was drafted and reviewed. The questions were developed from previous surveys and workshop information. The survey consisted of identification of the LPN program, eight questions of which all were closed ended with five questions having space provided for comment, although comment was not requested or required, i. e. the question could be answered yes or no with no further remarks needed for clarity. The items included program hepatitis policy, person/institution responsible for payment of hepatitis vaccine, places where students obtained vaccine, percentage of students receiving vaccine, proposed changes in hepatitis policy, future plans for programs not currently having a hepatitis vaccine policy and identification, both present and future of clinical sites that required students and employees to have the hepatitis vaccine.

Data Collection

All licensed practical nursing directors received an explanation of the purpose of the survey, the survey instrument and a stamped return envelope. After two weeks, a follow up letter was sent to the 15 LPN directors who had not responded at that point. Two telephone calls were made instead of a follow-up letter. One week later, six telephone calls were made to those directors who had not returned the survey instrument.

Thirty eight directors responded of the 41 queried; a 93% return rate. All returns were usable.

Data Analysis

Data analyses were limited to frequencies and percents.

Discussion of Findings

The study findings were discussed under eight headings. The headings are: (1) number of LPN programs having a hepatitis vaccine policy; (2) person/institution responsible for payment of hepatitis vaccine; (3) institutions/individuals from where students obtained vaccine; (4) percentage of students in programs receiving the hepatitis vaccine; (5) proposed changes in hepatitis policy; (6) future plans for programs without a hepatitis vaccine policy;

(7) identification of clinical sites that require students to have the hepatitis vaccine and (8) identification of clinical sites, not now having the policy, but in 1993-94, will require students to have the hepatitis vaccine.

Programs with formal hepatitis policy

A formal hepatitis policy was defined in the survey instrument as "information sent home and student or parent must sign whether or not student will receive hepatitis vaccine". Twenty four (63%) respondants replied yes. Eight program directors (21%) responded no and six (17%) did not answer the question. Two of the programs that responded in the negative added comments. One stated that the students must sign a "risk for exposure to communicable disease" information sheet and strongly encourage the vaccine, but did not require it yet. The other program director stated that policy recommended the vaccine and included it as part of the student handbook. Also, parents documented that they had read and understand all policies.

Who pays for hepatitis vaccine immunization

The most frequent answer was "student pays for vaccine" (58%). The cost ranged from $92 to $160 with the average cost $120. Hospital was the next most frequent response (29%). Other responses included from employment as certified nurse aide (21%), Jobs Training Partnership Act (JTPA) (21%), medical insurance (16%), military hospital or clinic (11%), MEDICAID (8%), cost included in tuition received just one response (3%). The category "other" was answered by six programs (16%) and included prison, employed by dentist, rescue squad member, degree in other fields, Pell grant or Stafford loan and Virginia Employment Council. Some program directors responded in more than one category. Two programs left the question blank. Table 1 lists the responses regarding who or what agency pays for the hepatitis vaccine.

Table 1

Individual/agency, frequency of responses *

Individual/agency	Frequency**	Percent***
Student	22	58
Hospital	11	29
JTPA	8	21
Mmedical insurance	6	16
Military medicine	4	11
MEDICAID	3	8
Included in tuition	1	3
Other	6	16

* non response 1
** Multiple entries (N=54)
*** Multiple responses account for > 100%

Where students receive hepatitis vaccine

A hospital was the most frequent response (45%) as the agency where students received their hepatitis immunizations. Of the 17 responses, 10 hospitals provided the vaccine free; the remaining seven facilities charged. The next most frequent response was the health department (37%). Of the 14 responses, all health departments charged except in three cases, the vaccine was provided free (1) "if a student qualifies" and (2) for members of two counties. Ten (26%) responded physician where there was always a fee. LPN instructors provided the vaccine in six programs (16%), charging only for the vaccine, except in one program (2%) where the vaccine was paid for by tuition. The three (8%) military clinics that students used provided the immunizations at no expense to the students. The replies under "other" (13%) included students receiving the vaccine at no charge at their place of employment and one at a medical clinic where there was a charge. One respondant did not answer the question. Table 2 indicates the frequency of distribution of responses.

Table 2

Sources and frequency of responses *

Source	Frequency**	Percent***
Hospital	17	45
Health Department	14	37
Physician	10	26
LPN instructors	6	16
Military medical facility	3	8
Other	5	13

* non response 1
** Multiple entries (N = 50)
*** Multiple responses account for > 100%

Percentage of students who received the hepatitis vaccine

Table 3 illustrates the percentages of the students in programs receiving the hepatitis vaccine. The most frequent response (24%) was nine programs who had 90-99% of the students receiving the hepatitis vaccine. Seven programs (18%) had 100% of their students receiving the vaccine. Six programs (16%) had 50% of their students receiving the vaccine. There were two responses (8% each) for the following immunization rates: 70-89% and 30-49%. Four programs (11%) had 10% or less of their students receiving the vaccine. There was one response (3%) for 15-29% of the students in this program being protected by the hepatitis vaccine. One program, which reported that no students had received the vaccine although their cooperating hospital would provide it free said that there had been miscommunication. Another program that reported a 40% immunization rate stated that all of first year students said that they would receive the vaccine before they started their second year. Another program, with a 93% immunization rate stated that all students started the series but one did not complete because of pregnancy. Three programs did not respond to the question and one program did not know how many students had had the hepatitis vaccine.

Table 3

Frequency of students receiving the hepatitis vaccine *

Range	Frequency	Percent
100%	7	18
90-99%	9	24
70-89%	3	8
50%	6	16
30-49%	3	8
15-29%	1	3
0-10%	4	11

* non response 3, answer unknown 1

Any changes in the hepatitis vaccine policy for students in coming academic year

This question was clarified in the survey instrument by giving the example that this year students paid for the vaccine and next year the hospital would pay. Only two programs (5%) responded yes. One stated that next year all students will be required to have the vaccine and that students would assume the cost. The other program replied that the hospital had paid the cost for the students this year but would not next year.

Those programs that did not have a hepatitis policy this year, would they next year?

Eight LPN programs had replied that they did not have a hepatitis policy and six had not responded to the question. Table 4 shows the planned changes, if any, for those programs with out a formal policy. Table 5 shows the planned changes, if any, for those programs who did not respond to the question asking if the program had a formal hepatitis vaccine policy.

Table 4

Frequency of planned changes for programs with no policy

Change for coming year	Frequency	Percent
Formal policy	2	25
No policy coming year	2	25
Probably	1	12.5
Not definite	1	12.5
Unknown	1	12.5
Left blank	1	12.5

Table 5

Frequency of planned changes for programs who did not respond to question asking if program had a formal hepatitis policy

Change for coming year	Frequency	Percent
Formal policy	2	33
No policy coming year	0	0
Probaby	0	0
Not definite	0	0
Unknown	0	0
Left blank	4	67

Any clinical sites not allowing students without hepatitis vaccine

Seven program directors (18%) replied yes, 27 (71%) replied no and four did not respond to the question. The LPN program directors that reponded yes added the following comments. One day care center would not allow students without the hepatitis vaccine. All the hospitals in one county required that students have the vaccine, while another program used hospitals in two counties, both requiring the vaccine. One hospital would not allow students on the clinical floor who had signed a waiver stating that they did not plan to take the vaccine. One respondant answered no to the question did state that students must sign a hospital release form if they refuse the hepatitis vaccine.

Do program directors foresee that there will be clinical sites in the coming academic year that will require the hepatitis vaccine

Six programs (16%) responded yes, 19 (50%) replied no, while three programs (8%) were not sure and seven programs (18%) left the question blank.

Conclusion

The purpose of the study was to determine (1) how many of the licensed practical nursing programs had formal hepatitis policies, (2) where did students receive the hepatitis vaccine and who paid for the immunizations, (3) what percentage of students had received the hepatitis vaccine, (4) if programs did not have formal policies did they plan to in the coming academic year and (5) were clinical sites demanding that students have the hepatitis vaccine if they wanted to use the facility for clinical experience. The conclusions were that 63% of the programs (24 respondants) do have a formal hepatitis vaccine policy. Of the 14 programs that either did not have a formal policy or left the question blank, four will have a policy next year resulting in a minimum of 26 of the 41 LPN programs (63%) in the public schools will have a formal hepatitis vaccine. Virginia's leadership in Health Occupations Education will continue to educate and encourage all of the HOE programs to establish a formal hepatitis policy to protect students on their clinical assignments.

Forty nine percent of the programs have 80% or more of their students immunized with the hepatitis vaccine. This is encouraging because the cost of the hepatitis vaccine is a deterent towards total participation of all students. Ten hospitals provide the vaccine free of charge to the students which is generous and an example of school and industry partnership. Unexpected sources of agencies either paying the cost of the vaccine or providing it free for eligible students were the military, JTPA, MEDICAID and medical insurance. Previous or present employment in a health facility was another method of obtaining the immunizations at no charge.

Only a few programs (20%) reported that agencies are requiring that students must have the hepatitis vaccine to have clinical experiences in their facilities. However, this may increase as health industry adminstrators more fully realize that while their employees who are at risk for exposure to hepatitis are protected through immunizations, there are students gaining clinical experience who may not be. Hospitals are very sensitive to the potential of law suits, therefore, in the future, health occupations education instructors may need to require the hepatitis vaccine so that their students may have clinical experience.

Recommendations

Hepatitis is a very serious disease. It can cause morbidity and mortality. It can shorten a person's career in the health professions. Having hepatitis increases a person's chance of liver cancer later in life. The leadership in health occupations education has a moral and ethical obligation to have policies in place through education and advocacy to ensure that students are protected on the clinical site. OSHA regulations protect the employee in the health setting through required and free hepatitis immunizations but, unfortunately, the student is not protected by these regulations.

It is recommended that the health occupations education leadership in all the states and territories survey their programs to determine if programs do have a formal hepatitis policy and that instructors are using their contacts to learn where students can obtain the vaccine at minimun or no cost. Obtaining such base line data, states can determine in the coming years if there is a steady improvement in the numbers of students protected by the hepatitis vaccine.

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INTEGRATED ACADEMICS:
AN HOE MODEL

Karen E. Gable

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Integrated Academics: An HOE Model

by

Karen E. Gable and Beverly Ransdell

Abstract: The integration of academics and occupational education is a concept supported by the business community, vocational educators and state and federal policy makers. The 1990 Carl Perkins Amendments required federal moneys be spent on programs that "integrate academic and vocational education...through coherent sequences of courses, so that students achieve both academic and occupational competencies" (section 235). This study analyzed the process and product of courses developed within a secondary Health Professions Center magnet program in Indiana against the elements of success as outlined by Statz and Grubb as well as Pritz.

Conceptual framework of the project

Academic and vocational education are increasingly the foci of external as well as internal accountability pressures. Reduced enrollments, increased secondary graduation requirements, and high dropout and illiteracy rates have led to recognition that the integration of vocational and academic education offers an opportunity to foster change in an educational system that is in need of reform.

Federal legislation such as the Perkins Act and subsequent Amendments and the national attention to the Goals 2000 effort have led to increased attention to a closer relationship between the academic and

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occupational preparation of students. Section 235 of the Perkins Amendments specifically requires that federal moneys will be directed to the integration of the dual structured educational system.

National efforts such as the consortium of 19 states known as the Southern Regional Education Board (SREB) have been undertaken. According to Bottoms, SREB was formed to "develop, apply, evaluate, and advance approaches to strengthen students' basic competencies in communications, mathematics, and science, and their critical thinking and problem-solving abilities" (Bottoms and Presson, p. vi). SREB worked with vocational education, business and industry, and government leaders in an effort to improve general and vocational education in the high school setting. In its research efforts, over twenty-five schools were studied, approximately 2,700 high school transcripts were reviewed, and over 1,700 vocational students were involved in a one year post-completion follow-up study. The research report of the SREB recommended raising of academic and technological literacy of graduates of secondary education.

State efforts such as those in Ohio have led to the adoption of a curriculum of "applied academics" in which academic and vocational teachers have worked together as a team to develop curricula. The Indiana state legislature enacted Senate Bill # 419, in February of 1993, which requires the implementation of Tech Prep, an articulated secondary/post-secondary educational program intending to provide students with opportunities to develop basic academic as well as occupational skills in a seamless educational ladder. Pilot sites are designing and implementing self-designed programs with the approval of the Indiana Department of Education. Concurrently, the Indiana Department of Education has also become a member of SREB and is involved in four pilot sites within the state. As a result administrators and educators in Indiana secondary schools are involved to varying degrees in educational reform some of which is state mandated and some of which is self-initiated.

Obviously a variety of practices and approaches are being initiated in schools across the United States. These approaches have varying goals, desired outcomes and purposes. Grubb et. al. (1991) identified eight integration models. These models may be modified and suggest various ways to approach educational reform. Benefits and limitations exist for each of the models and should be seriously considered prior to choosing a particular one to use. The descriptive model titles, as presented by Lankard, are as follows:

1. incorporating more academic content into vocational courses,
2. combining vocational and academic teachers to enhance academic competencies in vocational programs,
3. making academic courses more vocationally relevant,
4. curricular "alignment" modifying both vocational and academic courses,
5. the senior project as a form of integration,
6. the Academy model,
7. occupational high schools and magnet schools, and
8. occupational clusters, "career paths" and occupational majors.

Description of the Program

The Health Professions Center (HPC) is a part of the School of Health and Human Services within the Indianapolis Public School (IPS) System, with an enrollment of approximately 46,000 students. The HPC offers three levels of preparation in three career tracks to its 250 students yearly. These options include career exploration in the fields of Allied Health, Nursing, Dentistry, and Medicine. Five persons comprise the faculty of HPC and are members of the larger 15 member math-science and HPC magnets' faculty group of Arsenal Technical High School. The high school is one of the seven high schools within the IPS system and has approximately two hundred faculty members.

The system is actively involved in restructuring its organization and innovative educational reform efforts. Faculty members are encouraged to pursue advanced degrees and to be involved in curriculum re-design and implementation.

The Description of Process of the Integrated Academic Curricular Development

A variety of reasons triggered the interest in the integration of the science courses and the Health Occupations courses. Students lacked the science knowledge for problem-solving at the job sites. Reflective of the fact that occupational educators, generally, have been criticized for focusing upon specific knowledge and skill training perceived to be required for student preparation for the world of work, the HPC faculty resolved to create a curriculum to address the problem. Moreover, science educators as well as the "academic" teachers in general, have been subject to criticism for not providing participatory instructional strategies and for not providing opportunities for students to perceive the linkages between content and the "real world". (Grubb et al, 1991) Additionally, business and industry has proclaimed that schools are not preparing students who have skills necessary for working in a global economy, e.g. higher order thinking, problem-solving, communication, and job-keeping abilities and skills. All of these reasons precipitated an interest in developing and implementing a Health Occupations curriculum to prepare students for future career entry.

Development tenets

From the beginning in 1987, basic beliefs guided the process. These were reflections of the professional attitudes and values of the educators and administrators involved. These values resulted in the following principles which guided the curricular development:

1. The curriculum product must adhere to state curriculum proficiencies in both of the areas of science and health occupations.
2. The curriculum should reflect basic concepts of exposure, re-enforcement, and enhancement.
3. The developmental effort should involve teachers from both the areas of science and health occupations education.
4. The curriculum should be implementationally feasible (time frame; personnel; equipment and supplies, etc.).
5. The curriculum should be implemented within two years of development.

Developmental Steps

Investigation of the skills and concepts in HOE was the first step in the process. This was done by studying existing curricular materials to identify specific knowledges and skills. The second step was to look at the state proficiencies for science, specifically biology and chemistry, and health education. After listing both the state health education and science proficiencies and HOE knowledges and skills, a process of matching was done over approximately a six month period. There were areas which did not match, for instance medical terminology and the biological classifications. In this case the science and HPC courses operated independently.

The third step included the development of goals and objectives by two of the science and HPC teachers. Following the development of the goals and objectives, activities were written which were congruent with the student objectives. The activities were derived from a wide variety of sources such as existing lab manuals, reference materials, clinical lab procedures, and the creative efforts of teachers. A syllabus was developed, as the fifth step, which listed each day's activities. A list of materials needed was created and materials were ordered in preparation for curriculum implementationas the final step. Steps three through six were completed in approximately a one month period of intense effort on the part of the two teachers.

In the summers following the first and second years of implementation (1988 and 1989) extensive revisions were undertaken. The reasons for revisions included the need for smoother implementation, improvement of activities, and more extensive inclusion of affective domain activities and evaluation. The third summer's (1993) revisions are focusing upon identification and evaluation of student outcomes at the completion of first, second, third and fourth years of health occupations education.

Description of the Integrated Curriculum product

The curricular product is a course description and listing of goals for Integrated Human Studies courses. Specifically the first year courses are entitled "Integrated Human Studies I and II" while the second year courses are identified as "Integrated Human Studies III and IV". The goals include "to integrate biology concepts with those of Health Professions", "to provide students with the knowledge, attitudes and skills needed to progress to the sophomore level of Health Professions", "to fulfill the state biology and health education requirements for graduation", and "to provide hands-on experience in many of the basic procedures utilized in various health care fields" (Wegner and Ransdell, p. 1).

Course objectives for the Integrated Human Studies I and II are as follows:

The students should be able to:

1. acquire knowledge of the structure and function of the human body.
2. relate the effects of various diseases on body systems.
3. display behaviors which lead to a healthy lifestyle.
4. master recognition of prefixes, roots and suffixes of medical terms.
5. use animal dissections to develop skills of investigation and observation.
6. be aware of professional behaviors displayed by members of the health care team.
7. develop skills needed to work as a health care team member.
8. understand the structure and function of plants and animals (Wegner and Ransdell, p.1)

Specific unit and lesson objectives are more detailed and are created and implemented by individual faculty members.

The curriculum guide includes instructional methods, a list of textbooks and materials required, and a listing of course topics for each class. The syllabus is a vital component of the guide and reveals the total integration of the science (biology or chemistry) and HOE concepts. Activities identified on the syllabus list objectives, materials, procedures, and method of evaluation. Faculty members are encouraged to develop appropriate instructional strategies when specific activities are not identified.

Implementation of integrated curriculum

In order to implement the curriculum effectively, it has been critical that the science and HPC teachers meet weekly to discuss the effectiveness of the activities, changes which need to be made, student discipline, and students' development. Although courses are not "team-taught", close cooperation and collaboration between the teachers is a critical component of implementation.

Back-to-back classes were initially attempted because of the belief that it would provide the optimum learning experiences. However courses are now offered separately because of extreme scheduling difficulties within the high school.

Examples of integrated concepts

In integrating the unit on the Circulatory System from biology with HPC courses, the structure of the circulatory system is taught in biology using activities which help the students to learn the names and function of parts of the circulatory system. In the HPC class, the students learn medical terms which relate to the circulatory system, study diseases of the system, and learn how to maintain a health circulatory system. Specifically, this unit addresses the state high school health education proficiency 7e (Ind. Dept. of Ed., Section He, p 31) "to design a plan for maintaining sound personal health". (Proficiency 7e for High School level) This unit also addresses the state high school science proficiencies of identifying and describing the function of body systems.

An illustration of the integration of chemistry and the health professions concepts is the unit on "Observation and Measurement". In chemistry the student practices metric measurement of volume, length and mass. The unit also involves qualitative and quantitative observations of the chemical reaction which occurs when a candle burns. Additionally, in the chemistry classes, the student learns to convert between metric units. In the HPC class, the student also will be working with length (height), volume (input/output) and mass (weight). The student learns the differences between qualitative and quantitative observations of patients. Practice of dosage calculations and conversions between metric and apothecary units complete the unit objectives.

Analysis of the Integrated Curriculum

The curricular developmental process and the product are a blend of four models of integration identified by Grubb et. al. Specifically Models #2, 4, 7, and 8, as previously discussed, all provided elements which form the basis of the integrated curriculum developed at the Health Professions Center. Model 2 "combines vocational and academic teachers to enhance academic competencies in vocational programs" (Lankard, p. 1). The collaboration and cooperation of the science and HOE teachers in the curricular development process and product exemplifies this model. For Model 4, characterized by the "curricular alignment modifying both vocational and academic courses" (Lankard, p 1.) provided the structure for the HPC curriculum endeavor. The curricular product was evidence of an effort to sequence learning experiences to allow students to logically build upon prior knowledge. Extensive cooperation between academic and vocational teachers was critical to the development and implementation of the curriculum. The element of magnet and occupational high schools as characterized by Model 7, was also present in this product. The program is situated in a magnet high school as well as being identified as within the School of Health and Human Services. From model 8, the concepts of occupational clusters and career paths were drawn. As evidenced by the total curricular design, students can prepare themselves for entry-level employment, technical training, or post-secondary higher education in a variety of occupational clusters. Students are encouraged to explore career opportunities as early as the sophomore level.

In an effort to analyze the success of the curricular process and product, the elements of success as identified by Statz and Grubb (1991) and Pritz (1989) were selected as criteria upon which to base judgment. These elements include the following:

1. Vision and commitment from all levels.
2. Consistent support from district administrators and state officials.
3. New resources for funding.
4. Autonomy for teachers.
5. Teacher training and re-training.
6. Evaluation of efforts.
7. Adequate time for implementation.

Using these criteria, the HPC efforts to integrate academic and vocational education were viewed as successful. Initially resources were abundant as evidence of district commitment and support. Teachers were allowed a great deal of freedom in lesson objectives and in identifying problems which needed to be corrected in the existing curriculum. Additionally, they were encouraged to continue their education through HOE certification and degrees, professional vocational associations, and workshop attendance. Teachers were given professional leave time to attend workshops and meetings. Constant evaluation of the program effectiveness was conducted through formal and informal discussions. Adequate time was provided to develop and implement the program.

Not all criteria were met successfully. While administrators acknowledge the importance of the program's existence, operative needs of the program are not always recognized. Severe funding difficulties within the Indianapolis Public School system could be a critical factor in this lack of recognition.

Conclusions, implications and recommendations

In conclusion, the curricular process and product developed by the Health Professions Center was a combination of several integration models. The blend was appropriate for the given situation of the magnet school concept, the educational reform integration efforts and the resources of the school system.

The curricular developmental activity was successful in comparison to the elements of success as identified. Two of the elements were perceived to be vital in the success. These included the professional autonomy of the teachers and the administrative support of continuing education of teachers. In addition to the elements discussed above, a crucial element in the developmental process as well as the implementation appeared to be the teachers' willingness to cooperate and collaborate.

The implications of the curricular changes are reflected by increased student learning. Students have become more aware of how academics relate to their health career choices. This results in better performance in their academic as well as HPC subjects. Additionally, the sequencing of the topics and experiences have provided a more logical framework within which student learning occurs. Because this integrated curriculum is outcome based students, teachers and administrators are aware of expectations and achievement of goals.

Continuous curricular evaluation and revision is highly recommended. The curricular process and product accomplished by the Health Professions Center should be considered as a potential model for other systems.

The elements of success provided a valid framework for analysis. However, consideration of student achievement should be included as a criterion for judging success. Additionally, it is recommended that teacher cooperation and collaboration also be included as an element for analyzing a successful model of integrating academic and vocational education.

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THE ABILITY OF WORK RELATED REWARDS TO PREDICT THE ORGANIZATIONAL COMMITMENT OF MARKETING EDUCATION AND HEALTH OCCUPATIONS EDUCATION TEACHERS

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The Ability of Work Related Rewards to Predict the Organizational Commitment of Marketing Education and Health Occupations Education Teachers

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Abstract: The purpose of this study was to explore the ability of extrinsic and intrinsic work related rewards to predict the organizational commitment of vocational teachers by program area--specifically, marketing and health occupations education. The dependent variable was organizational commitment. The independent variables included the intrinsic work related rewards--autonomy, significance, and involvement; and the extrinsic work related rewards--supervision, coworkers, promotion, general working conditions, and salary. Stepwise multiple regression analyses revealed significant differences between the model for marketing education teachers and the model for health occupations education teachers.

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The Metropolitan Life Survey of the American Teacher (Metropolitan Life Insurance Company, 1984) identified a number of problems facing teachers and the teaching profession. This report indicated that low salaries, poor working conditions, lack of prestige, and limited input into school decisions have caused dissatisfaction and excessive turnover in the teaching profession. Today, *Total Quality Management, School Restructuring,* and *Teacher and Student Empowerment* are just a few of the buzz words being used to suggest reforms in the current crisis in education.

Literature that addresses the education reform includes Educational Renaissance by Cetron and Gayle (1991), who devote one chapter of the book to examining the teaching profession, a profession in chaos. In 1987, they found the annual salary for beginning teachers averaged $17,500; by comparison beginning accountants earned approximately $21,200, computer specialists earned $26,170, and engineers earned $28,500. The pay scale has improved little since then. Because of starting salaries, teachers' colleges are unable to recruit the best students. Teacher educators point out that there are too few teachers to go around and predict that this shortage will continue well into the 21st century. By the time a teacher has been teaching in the classroom for five years, there is a 50% chance that he or she will leave the profession; if the teacher is employed in an urban area, that chance increases to 75%. Why this high dropout rate among teachers? Lack of commitment, stress, burnout, poor salaries, and lack of power in the school have all been suggested as possible precursors of teachers leaving the profession. To counteract the high dropout rate, the profession needs to seek answers to these and other related questions concerning the work related rewards of teachers. Teaching does not occur within a vacuum. Schools, school administrative personnel, resources, coworkers, salaries, and other variables impact the work related rewards of teachers and their attitudes toward the organizations in which they work. O'Brien, Akroyd, and Richards (1993) noted that

> ...some teachers report being extremely pleased with their schools and school systems, and appear to be quite dedicated to the overall success of those organizations. Often, such teachers are more involved in general school activities and usually enjoy pleasant longevity in their positions. Other teachers, however, report being very displeased with their schools and consequently are disinterested in the overall success of their schools. These teachers tend to be involved in the general activities of their schools as little as possible and may actively seek reassignment or relocation. In many ways, the organizational commitment of teachers is vital to the overall effectiveness of schools (p. 4).

The purpose of this study was to explore the ability of extrinsic and intrinsic work rewards to predict the organizational commitment of teachers in two vocational areas: marketing education and health occupations education. A review of the literature revealed that only a few studies have focused on the work related rewards of vocational teachers. One study (Akroyd, Richards, & O'Brien, 1992) reported the predictive value of work related rewards as determinants of health occupations education teachers' work satisfaction. Another study (Berns, 1989) identified the work related rewards of marketing education teachers. No research studies addressed the organizational commitment of health occupations education or marketing education teachers.

Work Related Rewards

The literature revealed that work related rewards were studied most commonly in reference to their relative importance as determinants of work satisfaction. Herzberg (Herzberg, Mausner, Peterson, & Capwell, 1957) proposed two basic classes of work rewards: (a) intrinsic factors such as achievement, recognition, and advancement; and (b) extrinsic factors such as pay, working conditions, and job security. Work satisfaction is viewed as the level and direction of an emotional state, or affective orientation, resulting from the appraisal of one's work and work experience and, in part, is a function of the individual's work rewards (Kallenberg, 1977; Locke, 1976; Ronen, 1978). Most theorists have argued that the overall level of work satisfaction is determined by some combination of the various facets of work rewards such as satisfaction with salary, coworkers, and supervisors. They have agreed that a two-factor model appears to explain the general trends reflected in the data (Campbell & Pritchard, 1976; Dyer & Parker, 1976). Mottaz and Potts (1986) found the perceived reward model to be the most appropriate procedure for predicting overall work satisfaction. The model consisted of three intrinsic rewards: task autonomy, task significance, and task involvement; and six extrinsic rewards: supervisors, coworkers, working conditions, salary, promotional opportunities, and fringe benefits.

Akroyd et al. (1992) found that selected intrinsic and extrinsic rewards were predictive of health occupations eduction (HOE) teachers' work satisfaction. Task involvement, an intrinsic reward, contributed more to HOE teachers' perceptions of their work satisfaction than general working conditions and salary, extrinsic rewards, but all three were significant at the .01 level.

Organizational Commitment

Mowday, Porter, and Steers (1982) offered a definition of organizational commitment which has three components: (a) a strong belief in and acceptance of organizational goals and values, (b) a willingness to exert considerable effort on behalf of the organization, and (c) a strong desire to maintain membership in the organization. Research on organizational commitment has been examined primarily in relation to turnover (Ferris & Aranya, 1983; Hom, Katerberg, & Hulin, 1979; Huselid & Day, 1991; Mowday, Steers, & Porter, 1979; O'Reilly & Caldwell, 1980; Steers, 1977; Stumpf & Hartman, 1984; Wiener & Vardi, 1980). Other research has established a relationship between job satisfaction and turnover intentions (Angle & Perry, 1981; Bedeian & Armenakis, 1981) and organizational commitment and job performance (Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989). Individuals who are committed to the organization are less likely to leave their jobs than those who are uncommitted (Porter, Steers, Mowday, & Boulian, 1974). Individuals who are committed to the organization tend to perform at a higher level and also tend to stay with the organization, thus decreasing turnover and increasing organizational effectiveness. As this nation's schools face a shortage of vocational teachers, more research on organizational commitment is required.

Porter, Crampon, and Smith (1976) investigated the relationship between organizational commitment and turnover. Using a 15 month longitudinal design with a sample of managerial trainees in a large merchandizing company, they found that trainees who voluntarily left the company during the initial 15 month employment period had begun to show a definite decline in commitment prior to termination.

Shaw and Reyes (1992) examined elementary and high school teachers' organizational commitment and workplace value orientation. The values orientation included two underlying value systems. The normative orientation emphasized the cultural values of the organization. Schools with a normative value orientation stress shared behavior norms developed through common group experiences, and are less reliant on formal written policy and pay and time schedules. The utilitarian orientation emphasized the materialistic aspects of organizational control. Schools with a utilitarian value orientation stress scheduling and written policies to regulate teacher work load, teaching, and extra duty assignments. The authors found that elementary school teachers had significantly higher levels of normative orientation and organizational commitment than high school teachers. In another study, Reyes (1990) reported similar findings:

> First, it is clear that in those organizations holding a stronger normative orientation, employees are more satisfied with their jobs and are more committed to the organization than employees in organizations holding a stronger utilitarian orientation (p. 20).

Purpose of the Study

The purpose of this study was explore the ability of extrinsic and intrinsic work rewards to predict the organizational commitment of teachers in two vocational areas: marketing education and health occupations education. The following research questions were addressed in the study:

1. Which intrinsic and extrinsic work related rewards significantly contributed to the marketing education teachers' perceptions of organizational commitment?

2. Which intrinsic and extrinsic work related rewards significantly contributed to the health occupations education teachers' perceptions of organizational commitment?

3. Are there differences in the magnitude of work related rewards which contribute to teachers' perceptions of organizational commitment by program area--marketing education and health occupations education?

Methodology

Population and Sample

The population consisted of vocational teachers in two program areas: marketing and health occupations education. The two program areas were chosen because they represent different approaches to teacher preparation, traditional and non-traditional. Most marketing education teachers follow a traditional approach to teacher certification, a four year baccalaureate degree, whereas most health occupations education (HOE) teachers follow a non-traditional approach. HOE teachers usually are employed as teachers because of their health specialties, with nursing being the dominant specialty. These teachers may have a diploma, an associate degree, or a baccalaureate degree. They usually receive a provisional teaching certificate and must take courses in pedagogy to meet the state certification standards. The sample consisted of all marketing and HOE teachers in three states: Georgia, North Carolina, and Tennessee. State departments of education provided lists of teachers in the two program areas.

Instrumentation

The instrument consisted of four parts: sample demographic characteristics, extrinsic work related rewards, intrinsic work related rewards, and organizational commitment. The extrinsic and intrinsic work related rewards and organizational commitment were rated on a four point Likert-type scale: strongly agree (4), agree (3), disagree (2), and strongly disagree (1). The extrinsic and intrinsic work related rewards were measured using an instrument developed by Mottaz (1981). Organizational commitment was measured using the Organizational Commitment Questionnaire (OCQ) developed by Mowday et al. (1979).

The five extrinsic work related rewards included general working conditions, supervision, coworkers, promotion, and salary. General working conditions were defined as the extent to which there were adequate resources to teach, and addressed physical facilities, equipment, workload, and work hours. The second reward, supervision, was defined as the degree to which supervisors were perceived as supportive and helpful to teachers, and included such traits as competence, fairness, and friendliness. Coworkers, the third reward, were defined by the degree to which colleagues were perceived as being supportive and helpful, and included such traits as competence, helpfulness and friendliness. The fourth reward, promotion, was defined as the extent to which the job provided opportunity for advancement, and included both opportunity and fairness. Salary, the fifth reward, was defined as the extent to which teachers believed their salary to be comparable to other teachers performing a similar function, and included amount, fairness, and adequacy. Mottaz (1985) reported the reliability of these measures as assessed by Cronbach's alpha, which yielded a reliability coefficient of .71 for general working conditions, .82 for supervision, .82 for co-workers, .82 for promotion, and .83 for salary (pp. 369-370). Mottaz (1985) evaluated the construct validity of these scales by factor analysis. Principal components factor analysis with varimax rotation confirmed distinct factors which defined each of the scales.

The three intrinsic factors of work related rewards involved facets associated with one's job, and included task autonomy, task significance, and task involvement. Task autonomy was defined as the degree of self-direction in task performance or teaching. Task significance was defined as the degree to which the task was perceived as a significant contribution to the work process or teaching. Task involvement was defined as the degree to which the task was considered interesting and rewarding in itself. Mottaz (1985) reported the reliability of these measures to be .92 for the autonomy scale, .79 for the significance scale, and .88 for the involvement scale (p. 369). Principal components factor analysis with varimax rotation confirmed distinct factors which defined each of the three scales.

The organizational commitment questionnaire consisted of 15 statements. Mowday et al. (1979) reported a median coefficient alpha of .90 with a range of .82 to .93 for 2563 employees in nine different public and private work organizations. The authors examined the construct validity through factor analyses. The analyses resulted in a single-factor solution and supported the conclusion that the items are measuring a single common underlying construct.

Data Collection

A cover letter, questionnaire, and a pre-addressed stamped envelope were mailed to all 580 marketing education teachers and 348 health occupations education teachers in the sample. The questionnaire could be completed within 10 to 20 minutes. A follow-up letter was sent to all teachers who did not respond within two weeks. Questionnaires were returned by 475 (51%) teachers: 282 (49%) from marketing education teachers and 193 (55%) from health occupations education teachers.

Data Analyses

Data from the questionnaires were entered into a database and analyzed using Version 6.4 of PC-SAS (SAS Institute, Inc., 1987). Frequency distributions and cross tabulations were used to confirm statistical assumptions. Correlation analyses identified the Cronbach coefficient alpha for the dependent variable and each independent variable. Two stepwise multiple regression analyses were run to identify which independent variables (extrinsic and intrinsic factors) were predictors of the dependent variable, organizational commitment for teachers by program area. The magnitude of contribution of each significant variable was determined by its standardized beta weight. A standardized beta weight close to 1.0 indicates a substantial contribution, while a weight close to 0.0 denotes little or no contribution (Pedhazur, 1982). A conservative significance level of .01 was used in all statistical interpretations due to the amount of variance not accounted for by the model.

According to Tabachnick and Fidell (1983), stepwise regression is used to answer the question regarding the best linear combination of independent variables to predict the dependent variable in this sample. Specific to this study, the question could be stated as, "Which extrinsic and intrinsic (independent variables) work related rewards were predictive of organizational commitment (dependent variable)?" In stepwise regression, the sample data, not the researcher, control the order of entry into the model for independent variables. Each independent variable is entered separately into the regression equation according to the explained amount of unique variance it explains after the other variables' effects are taken into account. Thus, stepwise regression analyses are seen as model-building rather than model-testing procedures.

Results

Analysis of the two multiple regression models yielded significant results. Six of the eight independent variables entered the stepwise procedure for marketing education teachers with five of the six significant at the .01 level. Five of the eight independent variables entered the stepwise procedure for health occupations education teachers with three of the five significant at the .01 level. In this section, reliability scores are reported for the dependent and independent variables. Then the results are organized and reported as they relate to the three research questions.

Reliability

Cronbach coefficient alpha for the dependent variable, organizational commitment, was .88, well within the range of .82 to .93 reported by Mowday et al. (1979). The scales measuring the intrinsic factors of work related rewards yielded alphas of .80 for autonomy, .85 for significance, and .85 for involvement; alphas for the extrinsic factors of work related rewards were .69 for general working conditions, .90 for supervision, .82 for coworkers, .92 for promotion, and .71 for salary. In comparing Mottaz's (1985) reliability findings for the intrinsic factors, two scales yielded smaller reliabilities: autonomy and involvement, while one scale, significance, yielded a slightly higher reliability from this study. In comparing the extrinsic factors of job satisfaction, two scales had smaller reliabilities: general working conditions and salary; two scales had higher reliabilities: supervision and promotion; while one scale had the same reliability: coworkers from this study. Nevertheless, all reliability scores fell within an acceptable range.

Which intrinsic and extrinsic work related rewards significantly contributed to the marketing education teachers' perceptions of organizational commitment? Table 1 reports the standardized beta weights for those variables that the stepwise procedure incorporated into the model to explain the predictive ability of the independent variables upon the organizational commitment of marketing eduction teachers. Two intrinsic and three

Table 1

Standardized Beta Weights on Organizational Commitment for Marketing Education Teachers

Variable	Standardized Beta Weights
Supervision	.2188*
Significance	.2158*
Involvement	.2137*
Promotion	.1592*
Coworkers	.1258*
General Working Conditions	.0985

Model Statistics:

R-Square=.44 F=37.52 p=.0001

*p<.01

extrinsic work related rewards were significant at the .01 level. The factors, in order of their standardized beta weights, included supervision (.2188), significance (.2158), involvement (.2137), promotion (.1592), and coworkers (.1258). Although the factor, general working conditions, was included in the stepwise procedure, it was not significant at the .01 level.

Which intrinsic and extrinsic work related rewards significantly contributed to the health occupations education teachers' perceptions of organizational commitment? Table 2 reports the standardized beta weights for those variables which the stepwise procedure incorporated into the model to explain the predictive ability of the independent variables upon organizational commitment of health occupations education teachers. Two intrinsic and one extrinsic work related rewards were significant at the .01 level. The factors, in order of their standardized beta weights, included significance (.2411), involvement (.2135), and general working conditions (.1591). Although supervision and coworkers were included in the stepwise procedure, neither factor was significant at the .01 level.

Are there differences in the magnitude of work related rewards which contribute to teachers' perceptions of organizational commitment by program area--marketing education and health occupations education? The stepwise procedures revealed notable differences between the model for marketing education teachers and the model for health occupations education teachers. Six of the eight independent variables entered the stepwise procedure for marketing education teachers with five of the six significant at the .01 level. Five of the eight independent variables entered the stepwise procedure for health occupations education teachers with three of the five significant at the .01 level. Task autonomy, an intrinsic

Table 2

Standardized Beta Weights of Independent Variables on Organizational Commitment for Health Occupations Education Teachers

Variable	Standardized Beta Weights
Significance	.2411*
Involvement	.2135*
General Working Conditions	.1591*
Supervision	.1539
Coworkers	.1169
Model Statistics:	
R-Square = .34 F = 21.21 p = .0001	

*p < .01

reward, and salary, an extrinsic reward, did not enter for either group. Together, the independent variables accounted for a significant percentage (44%) of the variance in the dependent variable for the marketing education model. This percentage (34%) was lower in the health occupations eduction model. In the marketing education model, supervision (extrinsic reward) entered first, followed closely by significance and involvement (intrinsic rewards). Promotion and coworkers also entered into the model. In the health occupations education model, significance (intrinsic reward) entered first, followed by involvement (intrinsic reward) and general working conditions (extrinsic reward).

In comparing the two models, two intrinsic work related rewards with similar weights are found in both models. Both marketing education and health occupations education teachers perceive that significance (work is worthwhile and makes an important contribution to teaching), and involvement (work is interesting and challenging and provides a sense of personal fulfillment from helping students reach their potential), are predictors of organizational commitment.

Four extrinsic rewards also were significant: supervision, promotion, and coworkers for marketing education teachers, and general working conditions for health occupations education teachers. The extrinsic rewards in one model were not significant in the other model. In the marketing education teacher model, supervision, with a standardized beta weight of .2188, entered the model first. Promotion (.1592) and coworkers (.1258) were fourth and fifth, respectively. General working conditions (.1591) entered the health occupations education teacher model in third place and was the last significant variable to enter the model.

Discussion

In order to explain the differences between the marketing education and health occupations education models, the authors looked at the paths to teacher certification which are required for secondary schools. As previously noted, marketing education teachers usually follow the traditional path to teacher certification. They are graduates of four year baccalaureate programs in teacher education. Socialization of the students into the teaching profession occurs through courses which provide interactions and experiences with schools, their principals, and teachers. These courses include both observational and actual hands-on teaching experiences under the close supervision of cooperating teachers employed by the secondary schools. Thus, these graduates have many opportunities to explore and experience the actual job performance of teachers and become familiar with the mores of the schools in which they expect to be employed as future teachers.

The same does not hold true for health occupations education teachers. These teachers do not follow the traditional path to teacher certification; they are employed as teachers based on their health specialties (usually nursing) and years of experience in the specialty. They come directly from industry without prior experiences in the school system. Courses in pedagogy are taken only after they are employed as secondary teachers. Therefore, health occupations education teachers have no opportunities to explore and experience the actual job performance of teachers or the mores of the schools.

These two paths to teacher certification may explain the differences in the perceptions of the two groups of teachers. Marketing education teachers perceived supervision as the most important variable in their organizational commitment. Through their previous school experiences, they have had more opportunities to interact with and recognize the importance of school administrators who are supportive and helpful in their roles as teachers. Health occupations education teachers have had no such previous school experiences. In their previous roles in industry, they served as independent health care practitioners requiring little or no supervision. They were considered the experts in their respective fields. Although supervision entered the health occupations education model, it was not significant at the .01 level.

Two intrinsic rewards, significance and involvement, were significant to the organizational commitment of both groups of teachers. Both groups perceived their work as worthwhile, really important, and making an important contribution to teaching (significance). Both groups also viewed their work as interesting and challenging and derived a sense of personal fulfillment from helping students reach their potential (involvement). Typically, teachers work in isolation within their classrooms. The feelings of isolation can be counteracted (a) by school administrators who are perceived as helpful and supportive; (b) by coworkers who are friendly and willing to share their expertise; (c) through promotional practices which promote equal opportunity for advancement and recognize teachers' strengths; and (d) through general working conditions which provide adequate resources, supplies, and equipment for effective classroom teaching.

There was no similarity between extrinsic rewards in the two groups. Marketing education teachers perceived supervision, promotion, and coworkers as significant to their organizational commitment. Their within school experiences as undergraduates may have contributed to those perceptions. Health occupations education teachers perceived general working conditions as significant to their organizational commitment. This perception may reflect their industry experiences. They were concerned with having adequate equipment, supplies and resources for effectiveness in the classroom.

The study yielded important information on what factors contributed to the organizational commitment of marketing education and health occupations education teachers. The information can be used to counteract the excessive turnover reported by the Metropolitan Life Insurance Company (1984). Schools administrations could use this information to increase satisfaction and reduce turnover of teachers in the secondary schools. Although administrators are unable to directly affect teachers' intrinsic values, Akroyd et al. (1992) noted that administrators can modify extrinsic factors in the environment to maximize the effect of such intrinsic values (p. 19). Administrators can provide a supportive environment for teachers by providing (a) equal and fair promotional opportunities for all teachers, (b) opportunities for teachers to interact and be supportive of one another, (c) supervision which is perceived as helpful and supportive by the teachers, (d) the resources and equipment that teachers need to be effective in their classrooms, and (e) public information on the need to improve teacher salaries. Effective schools require effective administrators and effective teachers. The contributions of effective administrators are paramount to increasing the work satisfaction and organizational commitment of teachers.

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BRIDGING THE GAP BETWEEN TRAINING, TESTING AND EMPLOYMENT

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BRIDGING THE GAP BETWEEN TRAINING, TESTING AND EMPLOYMENT

Fred W. Reneau

Jacquelyn King

ABSTRACT: A multi-media presentation highlighting the process of development of the state approved certification test for nurse aides in Illinois. Test development procedures such as task identification, task analysis and standards of performance are discussed. Involvement of the community of interest for this job including regulatory agencies, employers and training programs creates the bridging necessary for successful training for work.

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BRIDGING THE GAP BETWEEN TRAINING, TESTING, AND EMPLOYMENT

Many health occupations training programs must ensure that the students complete their program with enough appropriate education to begin functioning on the job. Good training and good testing only assist in verifying knowledge for work if the training and testing is relevant to the job. The following paper outlines a specific process in which the nurse aide training and testing program in Illinois has led to job-related training and testing for work. Processes are explained so that students, instructors and employers can understand the importance of making sure that there is a bridge and no gap between training, testing and employment.

What can we do to ensure that training works? Is the testing performed in the training program at the performance level required on the job? Is the training relevant to the job (employment)? The importance of bridging the gap between training, testing and employment (TTE) is clear. Without this TTE bonding, there is a great waste of time, money and effort.

Our Approach

Relevant training does not just evolve. Relevant training begins with identifying that occurs on the job and to what level of performance workers must perform within that job. The first step in the determination of relevant training is the identification of the tasks performed by workers doing the job. Once the tasks have been identified and validated, in workers' language, then the foundation for a training program is set. The second most important aspect to establishing relevant training is standards of performance. The standard to which tasks will be measured must reflect the success level required on the job. The third component in the development of relevant training is task analysis process. Only through analyzing the steps required to perform a task can we clearly establish the elements essential to the performance of that task. The fourth component is the appropriateness of the training materials. The training materials should be written at a level that is within the functional reading level of the trainees and should be comparable to the level of reading necessary on the job. The fifth component is the quality and quantity of the instructor's training. The instructors must be knowledgeable of the tasks, clinical skills and standards required for successful performance on the job. Illinois' testing format is also a part of the training information received in becoming an approved nurse aide instructor.

Task analysis process is the basis on which relevant evaluation measures are developed and implemented. Identification of the "must know, should know and nice to know" cognitive, psychomotor and affective learning is documented and incorporated into the training program.

Evaluation is based on the tasks and standards required of workers on the job. Testing is more precise in focusing on the standards expected of workers on the job.

Requirements for training and testing were part of the Omnibus Budget Reconciliation Act (OBRA) of 1987, also known as Medicare amendments. The regulations for nurse aide training were finalized in September 1991.

Training Program

The tasks (units of work) were validated by nurse aides employed in Illinois long term care facilities and home health agencies in 1990 and again in 1992. These 222 tasks and 21 essential skills are the basis on which the 120 hours of instruction is provided in Illinois

Department of Public Health (IDPH) approved nurse aide training programs (Illinois N=213).

Testing Program

The testing process occurs on two levels. The first level takes place within the training program. This testing involves cognitive, psychomotor and affective domains. Testing components include paper and pencil tests, structured performance simulated performance and work sample performances in the clinical setting. The second component occurs after successful completion of an Illinois approved training program. Students take the state-approved test for nurse aides. Successful completion of both testing processes qualifies the trainee for employment in a long term care facility in Illinois.

Tasks performed and validated by nurse aides employed in long term care facilities served as the IDPH test building foundation. Task analysis was performed on the 222 validated tasks. Test items were written from the identified essential knowledge, skills and attitudes associated with each task. Ten nurse aides from throughout the state representing long term care and home health agencies were the members of the task analysis and test item development committee.

Employment

Nurse aides employed in Illinois long term care facilities must complete an IDPH approved training program and the Illinois Nurse Aide Competency Test. The nurse aide must pass the competency test within the first 120 days of employment. Prospective employers are required to verify that the nurse aide applicant has successfully passed the Illinois Nurse Aide Competency Test.

There seems to be greater satisfaction with the quality of nurse aides currently being trained and tested in Illinois. A well trained nurse aide is more likely to deliver quality care to residents. Having consistent well trained nurse aides results in standards of care being equally applied across facilities. Initial training is removed from the employers realm of responsibility. Individuals applying to work in long term care facilities have knowledge of the type of work required as well as having had exposure to appropriate treatment of the vulnerable elderly population.

Summary

Precise application of principles of task identification, training standards, and task analysis should yield a cohesive program in which the trainee obtains appropriate quality training for their specific occupation. Verification of that training through testing demonstrates acquisition of effective knowledge and skills relevant to the employment setting. Other specific goals of this approach to linking training, testing and employment depends on involvement of employers, instructors and relevant regulatory agencies. Everyone associated with the job understands and supports the principles underlying making individuals ready for work.

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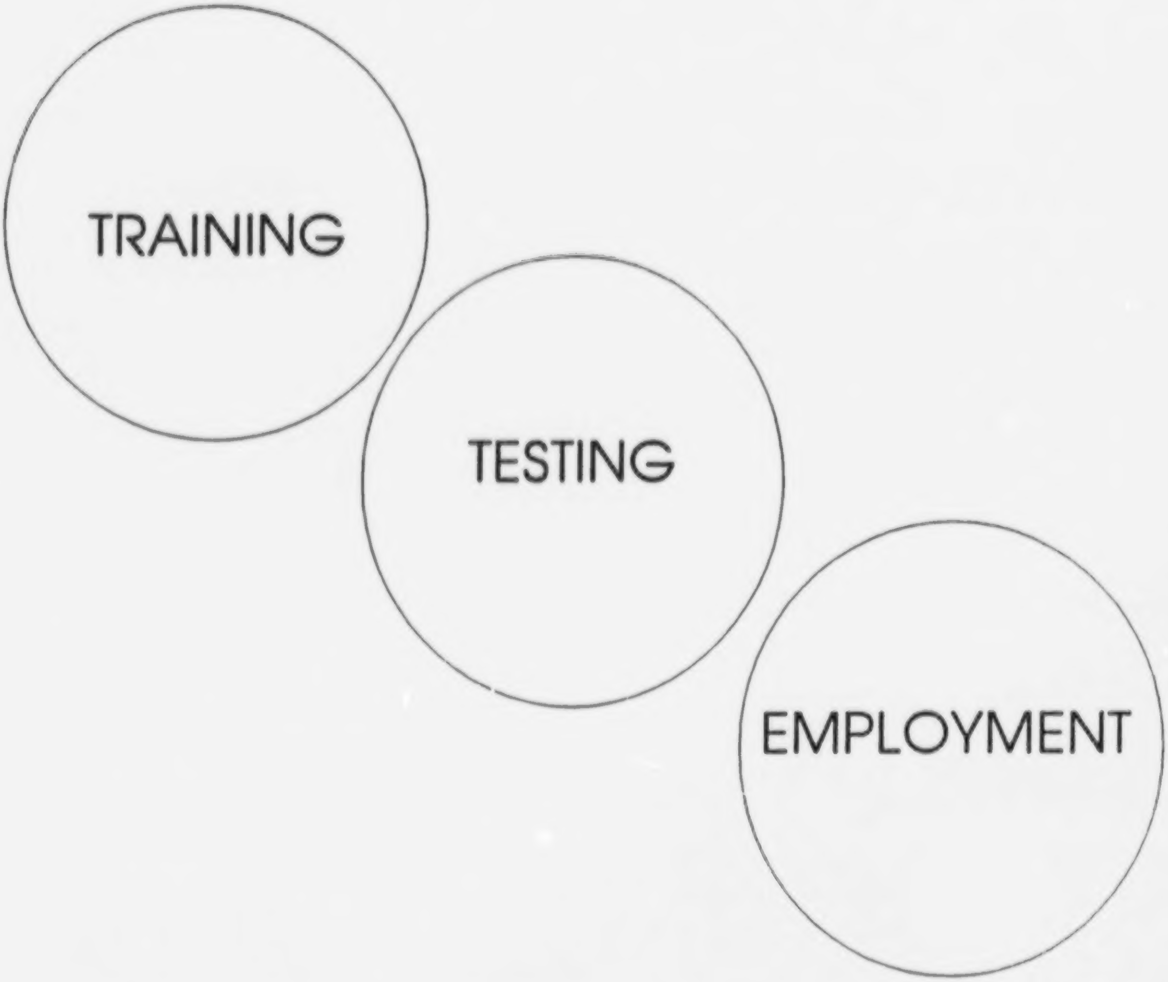
Bridging the Gap Between Training, Testing, and Employment



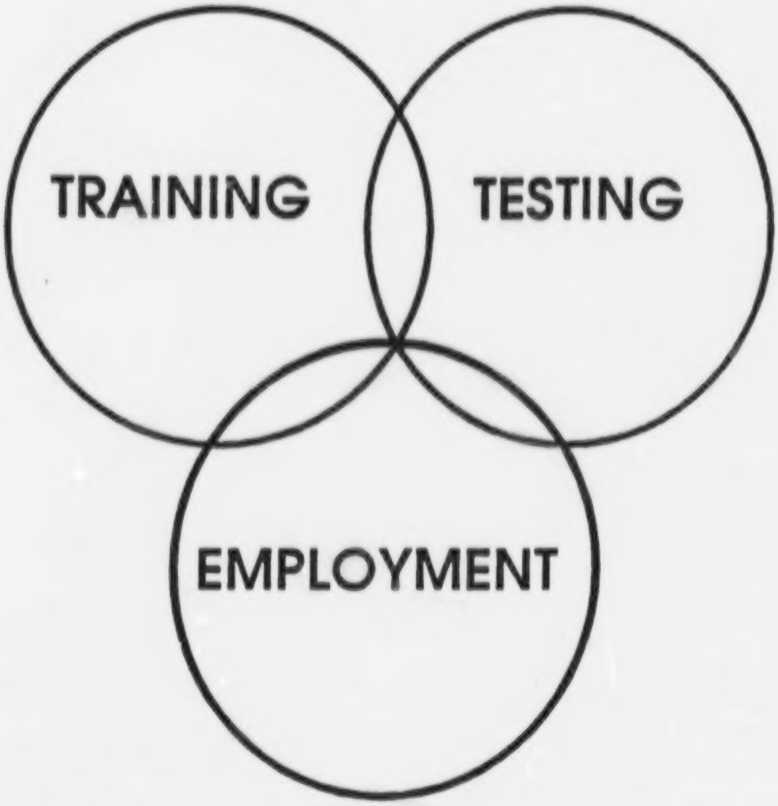
TRAINING

TESTING

EMPLOYMENT

Training and testing are not always connected to the job!

When training, testing, and employment are based on tasks and standards performed in the industry:



Then each element contributes to the development of the employee. It does not matter where the training takes place the outcomes performed are the same and standards are master at the employment level.

TRAINING

Requirements for training and testing were part of the Omnibus Budget Reconciliation Act (OBRA) of 1987. The nurse aide training program in Illinois requires 120 hours of instruction.

Each of the approved training programs includes both class and clinical activities necessary to master the tasks.

Curriculum and instructional materials are based on tasks performed by nurse aides employed in long term care centers in Illinois.

Two hundred and twenty-two tasks were validated in 1990 and again in 1992. The nurse aide tasks were grouped by duty areas.

TRAINING

These tasks were grouped by duty areas:

- Communicating Information
- Performing Basic Nursing Skills
- Performing Personal Care Skills
- Performing Basic Restoration Skills
- Providing Mental & Social Health Activities
- Providing Resident's Rights

Example tasks of personal care:

- Shampoo hair
- Shave resident
- Give bed bath
- Trim fingernails
- Give back rub

TRAINING

SELECTED PERFORMANCE SKILLS

Twenty-one skills are evaluated in the cognitive, psychomotor, and affective domains. Each step required to perform a skill is identified as critical, procedural or basic.

Critical - must be done!

Procedural - enhance completion of skill
- may vary

Basic (or core steps) - necessary part of every skill e.g. safety, infection control, resident's rights

Performace Skill - Measure Respiration

Standard: Recorded respiration to with + or - 2 respirations of actual rate.

Directions: Place a 'P' for PASSED in the column to the right of each step when it is performed to the standard.

PERFORMAN

*** 1. Wash hands (infection control).

*** 2. Identified patient and explained procedure (safety).

** 3. Positioned hand on wrist as if taking pulse.

** 4. Began counting when chest rose, each rise and fall of chest equals one respiration.

* 5. Counted respirations (15, 30, or 60 seconds, student start and stop).

* 6. Recorded the rate.

* Critical steps - must be done

** Procedural steps - enhance completion of skill (not critical and / or can vary)

*** Basic steps - necessary part of every skill - must be done

TESTING

Cognitive and performance based assessment.

Testing is an essential component of the nurse aide training program. The focus being on the mastery of tasks performed by nurse aides in long term care facilities.

The standard of performance equals the level of performance required on the job.

TESTING

The purpose of training and testing:

EMPLOYABILITY

Written and performance-based assessment

Major concerns:

1. Valid and reliable tests
2. Readability of the test population

WHAT IS READABILITY?

READABILITY is the ease or difficulty with which written documents can be read.

Factors influencing readability:

Length of sentence

Familiar words

Unfamiliar words

Sentence structure

READABILITY

There has been and currently is disagreement over the value of readability formulas and the validity of these formulas.

RAYGOR

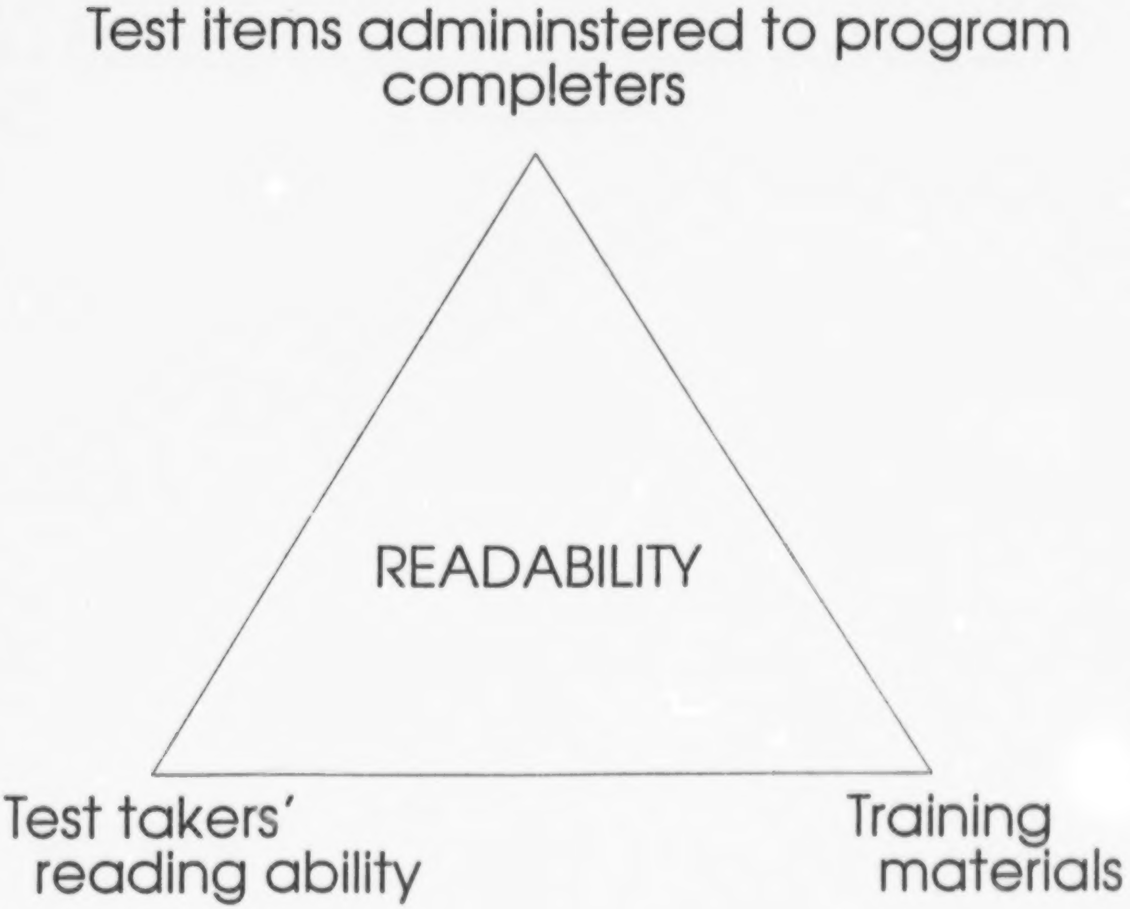
FOG

SMOG

FLESCH

FRY

READABILITY AND THE NURSE AIDE PROGRAM



Test items admininstered to program completers

READABILITY

Test takers' reading ability

Training materials

READABILITY FORMULAS USED IN NURSE AIDE TRAINING TEST DEVELOPMENT PROCESS:

TEST ITEMS - FRY SHORT FORMULA
TEXT MANUALS - FOG; FRY; SMOG
TEST TAKERS - CLOZE

FRY'S SHORT PASSAGE READABILITY
(GRADE LEVEL ESTIMATE)

STEPS:

1. Ensure a minimun of 3 sentences & 40 words are included in the passage (but less than 300 words).
2. Select at least 3 key words (words necessary for understanding the passage).
3. Use "THE LIVING WORD VOCABULARY" to identify grade level for each key word.
4. Average the "key words" grade level (word difficulty).
5. Count the number of words in each sentence and give each sentence a grade using the sentence length chart.
6. Average the grade level of all sentences (sentence difficulty).
7. Average the sentence difficulty and the word difficulty.
8. Re-check calculations

RESULTS = READABILITY ESTIMATE

READABILTY OF A TEST ITEM USING THE FRY'S SHORT PASSAGE READABILITY

EXAMPLE:

SPUTUM IS COUGHED UP FROM THE:

A. NOSE.

B. LUNGS

C. THROAT.

D. STOMACH.

16 4 12 4 4
SPUTUM IS COUGHED UP FROM THE:

4 4 4 4
NOSE LUNGS THROAT STOMACH

WORD DIFFICULTY = (16+12+4)/3=10.66
SENTENCE DIFFICULTY = (2+2+2+2)/4= 2
7=2; 7=2; 7=2; 7=2

(10.66+2)/2

READABILITY ESTIMATE = 6.33

EMPLOYMENT

SUCCESSFUL TRAINING AND TESTING =
THE OPPORTUNITY FOR EMPLOYMENT!

SETTING:

Long term care facilities
Skilled care units of hospitals
Home health agencies

TESTING IS NOT USED AS A NEGATIVE FUNCTION OF GATE-KEEPING BUT IS USED AS VALIDATING THE TRAINEE'S KNOWLEDGE OF THE JOB.

ASSESSMENT OF COMPUTER USE BY HEALTH OCCUPATIONS TEACHERS IN FLORIDA

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ASSESSMENT OF COMPUTER USE BY HEALTH OCCUPATIONS TEACHERS IN FLORIDA

Janice R. Sandiford[1]

Abstract: During the past decade, the microcomputer has become a powerful tool for teachers in the delivery of instruction to students and in the preparation of lessons and materials for classroom use. The purpose of this study was to determine the extent to which health occupations education teachers in Florida were using the microcomputer in their personal and professional lives. The study focused on 1) the literacy of the health occupations education teacher, 2) the software being used for desktop publishing, word processing, data bases, spread sheets, style/grammar checker, graphics/presentations, gradebook, test bank, statistics and communications, 3) The types of activities using word processing, data bases, spread sheets, and communications, 4) the ways hospitals are using computers and how students are involved, and finally, 5) how teachers were using computers with health occupations education students. The findings indicated that the majority of respondents were using computers for a variety of activities at home and at work. Word processing activities were the most frequent application made of the computer. The computer most often used was the IBM both at home and at work and the word processing

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processing program used most often was WordPerfect. While the computer is being used with students for computer assisted instruction, this use seems to be limited.

While the origin of the computer is often traced to prehistoric times, the modern day main frame computer began in the 1940's with the development of the Mark I, followed closely by ENIAC, EDVAC and the Univac I. (Bullough & Beatty, 1991). Early computers were large, expensive and available only to selected populations, usually government agencies or large commercial corporations, until the microcomputer became available to the general public in the late 1970's. As technology improved, so did the availability of the computer to other users, among these being health care professionals and teachers. It was only a matter of time before the health occupations education teacher made use of this technology available in the education setting.

Literature Review

Computers in Health Care

"Computers and computer-assisted systems have been used in hospital settings for more than 30 years." (Scarpa, Smeltzer & Jasion, 1992, p.73) Much has been written in the literature about the use of computers and technology in the health care industry (Ciancioto, 1990; Gardner, 1991; Geiss, 1992; Hales, 1992; O'Neil, 1990; Simpson, 1990; Stronge & Brodt, 1985; Whitehouse, 1981). Articles range from attitudes, to administrative uses, to equipment uses, to bedside care uses, covering just about every aspect of health care. While many of the early articles dealt with attitudes, today articles are directed more toward applications and cost-effectiveness issues (Johnson, 1992). It is obvious that computers and technology are here to stay in the health care industry having implications for educators and students in health care education programs.

Computers in Education

The literature abounds with articles presenting the use of computers in education. Much is related to programs from K - 12 with whole journals dedicated to these education programs. Some are more specific to vocational education such as the March 1992 issue of the Vocational Education Journal. Still others are specific to health occupations education (Grenn, 1992; Irving & Nubile, 1992). Yet, "our current teaching practices are alarmingly outdated in a world of technological wonders. . . . Current technological advances such as computers, laser discs, high speed printers and satellite or fiber optic telecommunication can help American educators make the transition into an era of individualized learning." (Bell & Elmquist, 1992, p.22).

The promise of being able to individualize instruction , to offer drill and practice of repetitious materials, as well as simulations of real situations without the treat of loss of life makes computer instruction attractive to all educators. The health occupations educator is no different. Many saw the advantage of computers in the instruction of health occupations education students and took advantage of opportunities to integrate computers into their programs. This use, however, is not documented in the literature.

A review of the literature revealed no studies had been reported which indicated the extent to which health occupations education teachers were using computers. In fact, a search of the ERIC data base made no mention of health occupations education and computers. Such a base line study was needed to be able to build a case for computers in the education of new health care professionals.

Purpose of the Study

During the past decade, as more and more teachers learned how to use the microcomputer, they began to use it for the preparation of lessons and materials for students. In addition, some teachers used the computer with their students in computer assisted instruction (CAI). As program consultants for health occupations talked with teachers, it was evident that health occupations teachers were using computers but their level of use and application was not known. In order to determine just how many health occupations teachers were using computers and to what extent, a state wide study was suggested.

The purpose of this study was to determine the extent to which health occupations education teachers in Florida were using computers to be used as a basis for planning state-wide educational programs and workshops, providing technical assistance to teachers, revising equipment lists, and sharing software lists.

Methodology

Population

The population of this study included all of the health occupations education teachers in Florida's public school and community college programs as listed on the mailing list compiled by the Florida Educators Information Service (FEIS). This information was originally gathered from state reports and was updated annually by the director of health occupations education programs for the State Department of Education. It was the basis for the Directory of Health Occupations Programs published by the State Department of Education. A total of 911 health occupations education teachers were identified.

Instrumentation

A questionnaire was developed by the researcher to obtain the data concerning the use of computers by health occupations education teachers in Florida. The questionnaire was presented to a panel of experts who reviewed it for clarity and ease of use. The instrument provided respondents an unlimited number of selections allowing them to check all that applied as well as write in responses. The instrument was divided into 5 sections; literacy, software, applications, students and training.

Data Collection

During the spring of 1992, a questionnaire was sent to each identified health occupations education teacher. Whenever more that one teacher was identified at a school, the questionnaires were sent to the school in bulk, addressed for distribution to each teacher. Due to a limited budget, return postage was not included for the questionnaires, realizing that this would have some effect of the final number of returns. Teachers were instructed to combine their questionnaire with other teachers and return them in bulk whenever possible, thus saving individual postage. Data are reported on responses from 262 returns from both the public school and community college health occupations education teachers. Responses represent a 29% return.

Data Analysis

Data from the responses were reviewed for the level of literacy indicated by the teacher, the software that was being used for computer applications, the types of activities health occupations teachers did with the various computer applications programs, the ways hospitals were using computers and the extent to which students were involved and finally how teachers were using computers with health occupations education students.

Findings and Discussion

Of the 911 questionnaire mailed, a total of 262 were returned for a 29% return. No attempt was made to increase the number of returns as teachers had begun summer schedules and funds were not available for a second mailing.

Level of computer literacy

Respondents were asked to describe their level of computer literacy and were able to check all that applied. A large number of health occupations teachers are using computers both at home and at work. Forty-three percent of the respondents indicate they used the computer at work for many tasks. Thirty-four percent indicated they used the computer at home for many tasks. Thirty-two indicated they used the computer at work occasionally, and sixteen percent indicated they used the computer at home occasionally. Only twelve percent indicated they never use a computer. Health occupations education teachers are using the computer for a variety of tasks at home and at work, the most common use at home and at work was listed as word processing (home - 25%, work - 28%). Table 1 lists the types of tasks performed on computers at home and at work. Many tasks were listed but because only 1 or 2 instances were listed, they are not included at this time.

Participants were asked to identify the type of computer they used at home and at work. A variety of computers were listed by the health occupations teachers.

Table 1

Types of Tasks Performed on Computer

Task	Percent work	Percent home
Word Processing	28%	25.%
Test questions	23%	10.%
Correspondence	19%	15.%
Lecture, lesson plans	16%	10.%
Gradebook	15%	3.%
Data Base	9%	6.%
CAI, Simulations	8%	
Student records	8%	3.%
Communications	7%	3.%
Banners, notices	6%	2.%
Spread Sheets	6%	4.%
Programs, curriculum	5%	2.%
Schedules	5%	1.5%
Handouts, information sheets	5%	5.%
Budget, accounting	4%	6.%
Electronic mail	4%	1.%
Overheads	3%	1.5%
Forms, documents	3%	1.5%
Minutes of meetings	3%	.5%
Mailing lists	2%	3.%
Signs & flyers	2%	2.%
Resumes for students	2%	.5%
Games	2%	7.%
Graphics	2%	1.5%
Inventory	2%	3.%
Calendars	2%	.5%
Charts & Lists	2%	
Degree Audit	2%	
Syllabus	1%	.5%
Class assignments academic class		5.%
Newsletters		1.%

The IBM or IBM compatible computer was the most frequently used computer both at home and at work. At home, the health occupations teacher used an IBM (17%) or IBM compatible (23%), while at work the teacher used an IBM (37%) and IBM compatible (19%). Also used at home, but less frequently was the Apple II family of computers (10%), the Macintosh family (5%), the Tandy (3%) and none 10% . At work these percents include: Apple II family (21%), Macintosh family (11%), Tandy (5%), and none 8%. Health occupations education teachers also had Commodores, Atari, Radio Shack and other miscellaneous computers at home but in limited numbers..

The final question regarding literacy reflects the number of hours that health occupations education teachers use their computer at home and at work. Table 2 presents the data. The majority of respondents used the computer between 1 and 5 hours per week both at home and at work.

Table 2

Hours per week of computer use

Amount of time	Work %	Home %
Don't have access	7.6	9.5
< 1 hour	1.5	1.
1 - 5 hours	36	28.
6 - 10 hours	16.4	11.8
11 - 15 hours	5.7	2.3
16 - 20 hours	4.1	3.8

Computer Software

Part two of the questionnaire dealt with applications software that the health occupations education teacher used. While teachers were using a variety of word processing programs, other applications showed more limited use. The majority of teachers were using WordPerfect (37%), followed next by AppleWorks (15.6%). Word processing programs, their frequency and percentage of use are shown in Table 3. Teacher were asked about data base programs they were currently using. Table 4 presents this data. Likewise, teachers were asked about spreadsheet programs they use. Table 5 presents this data. In all cases of software use percentages total greater than 100% due to multiple answers by respondents.

Table 3

Frequency of use of Word Processing Programs

Name of Program	Frequency	Percentage
WordPerfect	97	37
AppleWorks	41	15.6
Microsoft Works	25	9.5
None	35	13.3
Other	24	9
WordStar	14	5.3
Word	13	5
PC Write	12	4.6
Word for Windows	8	3
Professional Write	6	2.3
PFS Write	6	2.3
First Choice	5	2
FreEdWriter	4	1.5
DeskMate	4	1.5
Leading Edge	3	1

Table 4

Frequency of use of Data Base Programs

Name of Program	Frequency	Percentage
None	117	54.6
AppleWorks	31	11.8
Microsoft Works	30	11.5
Other	28	10.7
dBase III	18	6.9
File Maker	10	3.8
PC File	8	3
File Express	5	1.9
Data Perfect	5	1.9
dBase IV	4	1.5
PFS Data Base	3	1
First Choice	3	1

Table 5

Name of Program	Frequency	Percentage
None	142	54.1
Lotus 123	29	11
AppleWorks	24	9
Microsoft Works	23	8.8
Other	17	6.5
Excel	14	5.3
Quattro Pro	6	2.3
First Choice	5	2
PFS Spreadsheet	3	1

When asked specifically what types of things they do with word processing, data bases and spread sheets, the list is exhaustive. Those teachers who use computers used them for a variety of applications. Tables 6, 7 and 8 present this data.

Table 6

Specific Uses of Word Processing

Use	Frequency	Percentage
Letters, Memos, Correspondence	136	52
Tests, Testbanks	79	30
Handouts, tasksheets, study guides	67	25.6
Lesson Plans, Lecture prep	41	15.6
Nothing, None	31	11.8
Reports	22	8.4
HOSA minutes, minutes of meetings	20	7.6
Schedules	18	6.8
Outlines	17	6.5
Papers, Essays, Term papers	16	6.1
Course work, self study	14	5.3
Revised Curriculum	10	3.8
Newsletters, announcements	10	3.8
Overheads	9	3.4
Records	8	3
Term papers	8	3
Lists (mailing, phone)	8	3
Agenda	7	2.7
Forms	7	2.7
Syllabus	7	2.7
Grades, Graphs	7	2.7
Calendar	6	2.3
Resumes	6	2.3
Research	6	2.3
Documents, Budget	5	1.9
Accreditation documents	4	1.5

Table 7

Specific Uses of Data Bases

Use	Frequency	Percentage
None, Nothing, NA	134	51.1
No response	56	21.4
Student info, student records	20	7.6
Mailing Lists, Telephone lists	13	5
Address Book	8	3
Mailing Labels	7	2.7
Grades for students	6	2.3
Record keeping	5	1.9
Budget requests	4	1.5
Test Evaluation, test bank	4	1.5
Literature search	4	1.5
Survey results	3	1.1
Print Shop	2	<1
Schedules	2	<1
Equipment Lists	2	<1

Table 8

Specific Uses of Spread Sheets

Use	Frequency	Percentage
None, NA, Nothing	98	37.4
No answer	68	26
Grades	36	13.7
Budget, Accounting	15	5.7
Clinical rotation schedules	9	3.4
Graphs	6	2.3
Lists	5	1.9
Statistics	4	1.5
Administrative Tasks	3	1.1
Charts	3	1.1
Records	2	<1
Reports	2	<1
Financial Statements	2	<1
Test questions	1	
Faculty loads	1	
Anything needing a column format	1	

Table 8 Continued

Specific Uses of Spread Sheets

Use	Frequency	Percentage
Information sheets	1	
Addresses	1	
Labels	1	
Banners	1	
Signs	1	
Not much	1	
Home records	1	
Analysis of reports, data trends	1	
Forecasting enrollments	1	

Additional Software

Further exploration of application software programs revealed limited use by health occupations education teachers. Forty-three percent of the teachers indicated they were not using Desktop Publishing programs. The program most often used for desktop publishing was WordPerfect (29%), followed by Microsoft Works (10%) then AppleWorks (9.5%). These programs , while they do allow some desktop publishing, are generally considered to be word processing programs rather than desktop publishing programs. Only 3.5% of the teachers were using Pagemaker a common desktop publishing programs. Other true desktop publishing programs such as Ventura and Quark were not used.

Health occupations education teachers were not using interactive video in their classrooms. Only 28% of the teachers indicated using interactive video. Programs used were Health Series (11%), other (10%), AIDS (6%), Science Helper (1%) and BioSci (1%).

Grade book programs were in limited use by health occupations education teachers in Florida. Most teachers were using a generic spread sheet (8.4%), other (9.5%), Apple Gradebook (3.4%), Par Score (3%), Gradebook (1.5%), Grade Guide (1.1%).

Test bank programs were also in limited use. A wide variety of other (8%) were used, followed by Microtest II (4%), Par Test (2.7%), Word Perfect (2.3%), MECC Teacher Utility (1.1%), with 82% of the teachers using none.

Most health occupations teachers were not using writing style/grammar checking programs (83.6%), nor statistical packages (93.5%), nor communications packages (87.4%). Those using the computer for communications were connecting to Medline (6%), a local bulletin board (3.8%), the Florida Information Resource Network (FIRN) (3.8%), or to the Library Users Information Service (LUIS) (4%), the state university's library network, Prodigy (2%) and CompuServe (1.9%).

Ways hospitals use computers

Hospitals in Florida are using computers in a variety of ways according to the health occupations education teachers. Order entry is the most frequent use of the computer, followed by the laboratory. Table 9 presents an alphabetical list of frequency of identified use of computers in Florida hospitals.

While computers are being widely used in clinical agencies used by health occupations education students, as a general rule, students are denied access to hospital computers. Many of the teachers (38%) responded that students "don't use, "not at all", "none," or "NA" when asked how students use computers at clinical sites. Among the student uses of computers are lab reports/look up lab work (n=31), charting/documentation (n=16), order entry (n=12), data acquisition and retrieval (n=8), care plans (n=5), radiology equipment (n=4), coding (n=4), recording meds (n=4), and clocking in (n=2).

Table 9

Specific Uses of Computers in Hospitals

Use	Frequency
Abstracting	2
Admissions & Medical Records	15
Billing	28
Census	24
Care Plans	26
Charts	18
Coding	3
Communications	18
Computerized Analyzers (blood gas)	3
Dental Office functions	5
Diagnostic values	2
Diagnostic equipment	2
Dietary	6
Doctor's phone lists	2
Documentation	1
Equipment	3
Everything	2
Filing	2
Lab data, lab results	69
Library	2
Life support	1
Medical Records	1
Medication sheets	10
Monitoring	1
Nursing Notes	5
Narcotic Control	1
Operating room schedule	1
Order entry (diagnostic tests, dietary, labwork, medications, supplies, etc.)	140
Quality control data	3
Patient Management system	3
Patient Profile	7

Table 9 continued

Specific Uses of Computers in Hospitals

Use	Frequency
Patient Lists	3
Patient records	9
Payroll	2
Physician diagnostic procedures	1
Poison Control Index	1
Pulmonary Function Studies	2
Payroll	3
Radiology examinations	9
Record keeping	7
Reports	3
Room location	1
Scheduling	8
Specimens	1
X-ray	15
Specimens	1
Staff Assignments	2
Statistics	4
Time Clock	4
Vital sign sheets	2
Veterinary hospital functions	4

Likewise, health occupations students are generally not issued codes to use the computers in the clinical sites as indicated by 45% of the respondents. Those that do use the computer "use student number plus password" (n=6), "per preceptor (n=4), "attend class and receive code" (n=3), "use school number assigned" (n=3), "use unit secretary's code" (n=3), "a staff person's code is used" (n=3), "use the nurse's" (n=3), "use general codes" (n=2), "use preceptor's code" (n=2), "use hospital personnel to make request when necessary" (n=2), "limited access" (n=2), "use instructor's code" (n=1), "given same security access as phlebotomy staff (n=1), "education coordinator requests codes" (n=1), "given to them by supervisor" (n=1), "up to faculty" (n=1), "by affiliate hospital staff" (n=1), "college affiliation agreement" (n=1), "issued codes" (n=1), "hospital issues temporary employee number with picture ID" (n=1), "hospital radiology department" (n=1), "name and student number" (n=1).

Computer Use With Health Occupations Education Students

In general, health occupations education teachers are able to use the computer with their students. Most commonly, this is done in the computer lab (88%), followed by individually (36.6%), as a group (25.5%), and in the classroom (21%). Only 11% of the respondents indicated they are not able to use the computer with their students.

There was a variety of responses regarding the level of student literacy and the major platforms used by students. Close to 26% of teachers believed that 76 - 100% of their students use computers, while 25% believed that less than 25% used computers. Table 10 presents this data.

Table 10

Level of Student Literacy

Level	Percent
Don't use	15.3
< 25%	24.8
26 - 50%	11.8
51 - 75%	6.8
76 - 100%	25.6
No response	11.0
Unknown	1.9
All students required to take course	2.3

Teachers identified that almost all major platforms were used by students with the most frequent being IBM (27%) followed by Apple IIe (13.7%), IBM compatible (13%) and MAC (7%).

The question relating to software used with students received a long list, the majority being identified by only one teacher. This list is presented in Appendix A. Teachers tended to list the software by its general topic, not by the publication name and consequently it is hard to specifically identify each program.

Likewise, teachers listed numerous ways they have integrated the computer in their programs. While 13.3% of the teachers indicated they have not integrated the computer into their programs, those that have integrated the computer most often use it for computer assisted instruction (CAI) (12%), computer literacy (5%), testing (5%), computer simulations (4%), resumes/application letters (3.8%), math (3.4%), word processing (3%), and special assignment (3%). A complete list is presented in Appendix B.

Teacher Training Needs

The final section of the questionnaire asked teachers to indicate what type of training in computers they felt they needed. Again, the responses were many. Few teachers did not respond. The need for computer literacy is still viable with 13.3% of the teachers indicating a need for introduction to computers. Many of the teachers wanted instruction in spread sheets (10%), testbank programs (9.5%), data base (7%) graphics (6%), interactive (5%), gradebook/grades (4.5%), WordPerfect (3.8%), word processing (3%), teaching with use of computer (3%), and programming (2.7%). A brief listing of other topics includes operating systems, authoring, communications, gradebook, desktop publishing, statistical packages, video disc, specific programs, making forms, networking, hard disk management, slide shows, presentation graphics and clinical computer use but were listed by only 1 or 2 teachers.

Conclusions and Recommendations

Conclusions

The purpose of this study was to assess the extent to which health occupations education teachers in Florida were using the microcomputer in their personal and professional lives. The study focused on the literacy of the teacher, the software being used, the types of activities the performed on the computer, the ways hospitals are using computers and the extent to which health occupations education students were involved and finally, how teachers were using the computer with their students in a effort to establish a base line for planning state-wide educational programs and workshops, providing technical assistance to teachers, revising equipment lists and sharing software lists. From the data, it can be determined that there continues to be a need for teacher training using computers. Responses were obtained from both public school and community college health occupations education teachers. This study is limited by the voluntary nature of the responses and is only applicable to health occupations education teachers in Florida.

From the study, it can be concluded that health occupations education teachers were using computers in their personal and professional lives but their use was limited. Only 12% indicated they never use the computer. Word processing was the most frequent use of the computer as teachers prepared their lessons, wrote tests and did correspondence. Other application programs such as spreadsheet and data base programs were used only by a few of the teachers. Use of pecific programs for desktop publishing, grade books, test banks, writing style/grammar checking, statistics and telecommunications were virtually non-existent.

Florida hospitals are using computers for a variety of ways but their use seems to be predominately in order entry, lab, admissions, billing and medical records. The radiology department was a heavy user of technology in diagnostic studies equipment. None of the respondents indicated that computers were being used at the bedside. Students are generally denied access to hospital computers. Those that have access, are given access to codes, but often in ways that do not guarantee strict security of data.

In general, health occupations teachers are able to use computers with their students and have indicated numerous ways that they have integrated the computer into their instructional practices. A large number of topics were included in the listing of software used by students. Computer assisted instruction (CAI) was the most frequent modality but it did not appear that teachers used CAI in place of regular instruction. This might be due to their lack of knowledge of the effectiveness of CAI in instruction, lack of appropriate software, or teachers' insecurity of using computers.

The results of the study have given evidence that health occupations teachers are interested in learning more about using the computer. A broad range of topics are of interest to the teachers. The fact that microcomputers have been gaining in popularity among professionals is evident among health occupations education teachers; there is still a population of health occupations education teachers that desire computer literacy courses and advanced training using the computer.

Recommendations

The health care agencies employing our graduates are using computers in a variety of ways and will expect that new graduates are skilled in computer use. Based on the study, it is recommended that health occupations education teachers be encouraged to continue their use of the computer both personally and professionally so that they can be comfortable using the computer. Teachers should provide expanded opportunities for students to use the computer in a meaningful way in their studies and schools should continue to place computers in the classroom for student use. As agencies become more computerized, more effective means for students to gain access to selected levels of computer data bases will be necessary. School districts will need to provide a wide selection of instruction to teachers from introductory literacy to advanced applications. As more technology becomes available for the teacher, health occupations education teachers will be ready to expand their skills and make effective use of this technology.

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Appendix A

The following represents an alphabetical listing of computer software used by health occupations education teachers. It is generally by topic rather than official publication name.

- Abdominal Pain
- Admission
- AIDS
- Anatomy & Physiology
- AppleWorks
- Apple
- ASCP Blood Interviewing
- A Surgical Patient
- Bank Street Writer
- Basic Hematology
- Bipolar Disorder - Manic & depressed
- Birth Defects
- Body Mechanics
- Body Structure
- Body Transparent
- Body Works
- B.A.R.N.
- C.A.I.
- Calulate With Care
- Career exploration
- Charting Program
- Chart Smart
- Chemotherapy
- Childrens Publishing Center
- Circulation System
- Clinical Simulations
- COBB Dental System
- Code 3 Code Master
- Complications of IV Therapy
- Computer Literacy
- Computerized Education systems
- CPR
- Cystic Fibrosis
- dBase IV
- Desk Mate
- Diabetes
- Digestion
- Doing the Write Thing
- Dosage
- Dose Calc
- Drugs and Elderly
- Drug Dose Calc & Administration
- Easy Dental
- Electical Safety
- Electro surgery
- Eliminating Medication Errors
- Elimination
- Emergency Care
- Employability Tips
- Exploring Medical Terminology
- Fire & Safety
- First Aid
- Florida Hospital Association
- Focus Media's Heart Simulator
- Focus Media's Human Systems
- Fundamentally Graphics
- FX
- Growth & Development Series
- Handwashing
- Harvard Graphics
- Health Awareness
- Health Careers in Medicine
- Health Risk Appraisal
- Hemo Dynamics
- HIV
- Homeostasis
- Hosp-Hosp Series
- Human Body Overview
- Human Life Processes
- Human Systems Keyword
- IBM
- Infection Control
- In-house developed programs
- Inorganic compounds
- Insulin Primier
- Insurance
- Internal Journey
- Intro to Apple IIe

Intro to AppleWorks
Intro to General Chemistry
IRP
IV Program
IV Therapy
Laserdisc
Legal Aspects
Lippincott
Literacy
Locally developed tutorials
LOTUS 123
MAC
Maternity Nursing
Math
Mathematics
Mathematics of Hospital Pharmacy
Math General Hospital
Micro Power & Light's Circulation
MECC
Medical Terminology
Medication Administration
Medication Clinic
Medication Errors
Medicomp
Medi Sim
Medline
Med Scientist
Med Surg
Medterms
Microsoft Works
Minims, Milliters & Drops
Mixing Meds
N-CLEX review
Nuclear Medicine Skills
Nurse Star
Nursing Care Assessment
Nursing Diagnosis
Nursing Process
Nutrition Tutorial
OB software
Page Maker
Parasitology
Parts of the Microscope
PAS
Pasco-Ditico
Pathology
PFS Write
Plato
Pharmacology
Physical Assessment
PIR
Pregnancy & Children
Pregnancy and You
Print Shop
Professional Write
Protecting Pt/Residents Rights
Pulmonary Functions
Ready-Set-Go
REMS
Respiratory Diseases
Resume Writing
Review on Bacteriology
Rov-a bot
Sex Ed
Skeletal System
Skin Disorders
Sosoft
Spelling for Medical Professions
Starship health wars
Sterilization
Test bank review
Therapeutic Communication
Therapeutic Counseling
TOPO
Tracks II
Transcription of Physicians orders
Treatment Planning
Typing Tutor
Universal Precautions
Venereal Disease
Vital Signs
Warlock Case Studies
Who Am I?
Word
WordPerfect
Word processing
Works

Appendix B

Ways teacher have integrated the computer in health occupations education programs.

Acutronics
AIDS and drug education
Body Structure
Case Study Reports
Class objectives
Class requirement for DA & DH
Clinical correspondence
Clinical Objectives
Clinical Simulations
Club lists, finances
Coding
Complete Module
Computer Assisted Instruction
Computer Literacy
Computer Simulations
Course
Data entry
Demonstrations in radiation physics, nuclear instrumentation, clinical training
Developed a course
Development keyboard
Drill and Practice
Drill for competitive events
Electronic Classroom
Electronic Writing
Enhancement
Equipment and procedures
Equipment Use
General Use in Health Care
Generate final lab report
Generate Worksheets
Grouping
HOSA
Hospital order entry
Individual Independent study
Individual Job Software
Interactive Video
Interviewing
Lab reports graphing
Learning guides on computer
Lecture
Library
LUIS
Make signs
Make up assignments
Math
Medical Terminology
Medical Transcription
Medication Software
Nursing Diagnosis
Office management
OJT paperwork
Optional
Orientation to lab and software
Overhead Projection screen
Patient disease status
Pharmacology
Physician's Office Training
Practice Exam
Radiologic Tech - Test review
Reinforce learning
Remedial help for students
Remedial review
Review programs for N-CLEX
Reports
Required viewing
Resume/ letter of application
Safety requirements
Simulated experience
Skill Check
Skill teaching
Special assignment
Structure & function theory
Student practice option
Supplemental lectures
Teaching Pharmacology
Term Papers
Test
Test generation
Test question review
Training Plans
Transparancies
Tutorial
Universal precautions
Word processing

EFFECTIVENESS OF SATELLITE PROGRAMS FOR TECHNICAL UPDATING OF VOCATIONAL EDUCATION TEACHERS

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"Effectiveness of Satellite Programs for Technical Updating of Vocational Education Teachers"

A presentation at the
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OVERVIEW

This presentation is a description of a funded project to use distance education technologies for technical updating of vocational education teachers in Florida. The project was completed during the summer of 1992. Eight of nine public universities in Florida worked in collaboration on the project. Delivery of twelve 1 1/2-2 hour live satellite programs was completed within a four week period with participation from throughout Florida.

GOALS

This project, funded with Carl D. Perkins federal support had as goals:

1. to use a variety of distance learning technologies to provide teachers with technical skills updating in specified vocational program areas.

2. to study the effectiveness and efficiency of interactive versus non-interactive formats for delivering distance learning.

3. to promote cooperation and teaming among academic and vocational teacher educators in Florida's state universities.

"Within the 12 programs several different learning technologies were used. A partial list is included below:

interviews - *taped roll-in and live
group discussions
panel
field trip - *taped roll-in
role playing
lecture
questions of participants - in studio and *via audio "bridge"
computer monitor access
industry representatives
demonstration of procedure
"overheads" - paper, slides, flip charts
brainstorming
survey
handouts
*faxed questions
*character generations
*still store
*chromakey"

(Hudson, 1992)

Many of these techniques are also used in a "traditional" classrooms and were also effective in these multiple site satellite programs. Those denoted by asterisks (*) are used specifically in distance education programs.

> "Interactivity is important whether in a traditional classroom or laboratory or when using multiple sites with satellite and telephone technologies. Research on learning supports interactivity through active participation as a key for learning. The goal was to compare the interactive (telephone bridge) sites to the non-interactive (downlink only) sites on surveyed items. Both interactive and non-interactive site participants responded positively to the programs."
>
> (Hudson, 1992)

From the perspective of promoting cooperation and teaming among university teacher educators the project was a definite success. Within the very short amount of time the vocational teacher educators developed and delivered quality satellite programs for the vocational education teachers of Florida. Eight of the nine public universities participated in the project with seven presenting programs and one as outside evaluator not involved in program production.

PLANNING

During the spring 1992 meeting of the Florida Association of Vocational Teacher Educators (FAVTE) the project was initially discussed. A team approach was offered with the suggestion that programs be developed by selected universities. A follow-up discussion about the proposed project was held with the State Director for Vocational Education and by the end of the day a six-page "pre-proposal" was delivered for consideration.

In April further discussions occurred between with a "request for proposal" and award of project at the end of April. Acceptance by participating eight universities was completed between a Friday and Monday with an overnight delivery to the Division of Vocational, Adult and Community Education (DVACE) by Tuesday. Within two weeks the final project was funded. Formal sub-contracts among the Sponsored Research Divisions at eight universities was achieved but not without some challenges.

To prepare the university teacher educators for teaching via satellite a special workshop "Teaching Through Interactive Television" workshop was offered and attended by representatives of the program-developing universities and the DVACE. Although not a requirement for funding of the project this intensive two-day hands-on, live studio workshop presented by Virginia A. Ostendorf was critical for success of on-camera delivery by the teacher educators. To maintain positive relations a copy of the Ostendorf book was also provided to their respective Occupational Program Director (OPD) at the DVACE unable to attend the workshop. A reference notebook was also sent to each OPD and the State Director of Vocational Education for reference.

INTERNSHIP I SURVEY

____________ SEMESTER

We are interested in what you think. Please answer honestly and provide suggestions. We would like to know what worked and was beneficial to you in this experience.

What did you like about your internship?

What schedule format do you think works best for this experience? (Full Days. Half Days. Number of Weeks)

What recommendations for change would you suggest?

How can we better prepare you for Internship II in this experience?

A brochure containing program titles and related information was developed within two weeks, printed and over 800 were mailed to school districts, community colleges, vocational centers, universities and to DVACE staff for additional distribution. Through additional contacts at the Florida Department of Education, Educational Technology and the state satellite staff of SUNSTAR additional brochures were sent to their designated downlink sites.

Notice of the programs was included in the Monday Report (a statewide weekly educational newsletter) and on the Florida Information Resource Network (FIRN), a statewide electronic mail network of over 8,000 participants. Local newspaper articles also described the project.

Acquiring satellite time for "C" Band for summer lightning storms was reserved. A "special" rate for the 24 contact hours was confirmed through AT&T SKYNET Services with each program-university billed for their respective hours.

Acquiring speaker phones and microphones of high quality was a necessity for the audio interactive sites. Speaker phones and microphones manufactured by A.T. Products were selected for use as the sole product. The Director of Marketing and President of A.T. Products also attended the training workshop and provided on-site hands-on training of the equipment. Their 800 phone number was also provided.

Weekly conference calls were planned with each program-university represented in most sessions. Representatives from A T & T SKYNET, SUNSTAR, AT Products and the DVACE on-line for planning and problem solving. These audio teleconferences were essential in maintaining the collaborative approach to the project.

EVALUATION

Participants were asked to respond to a questionnaire to get feedback on the programs. The following summary data is excerpted from the "Project Final Report" as compiled by the outside evaluator.

The evaluation questionnaire was structured such that answers to the first three items yielded the specific program that was attended by the subject, items four and five gave the subject's vocational area, and items six through nine gave the subject's school setting, work title, work status, and whether the site was an audio interactive bridge, respectively. Frequency distributions for these characteristics of the subjects are included in Tables 1 through 6. A total of 205 subjects returned questionnaires, though some subjects failed to respond to all items.

Table 1

Frequency Distribution for Program (Items 1-3)

Program	Frequency	Percent
Agribusiness (6/23)	22	10.7
Business (6/17)	22	10.7
Business (7/2)	11	5.4
Health (6/24)	10	4.9
Health (7/1)	8	3.9
Home Economics (6/25)	42	20.5
Industrial (6/8)	28	13.7
Industrial (6/30)	9	4.4
Marketing (6/29)	14	6.8
Public Service (6/24)	8	3.9
Technology (6/23)	9	4.4
Technology (6/25)	21	10.2
None of the above	1	.5
Total	205	100.0

Items 10 through 18 of the evaluation questionnaire requested opinions from the subjects concerning various ways of interpreting the success of the program that they experienced. These data are most relevant for the evaluation of the project.

Primary interest, therefore, is in whether subjects as a group tended to respond in a relatively positive, negative, or neutral direction. Two statistical tests designed specifically for such "polarity" hypotheses have been developed using slightly differing assumptions and statistical distributions. A test by Cooper (1976) yields a $\underline{z}$ statistic (or can be referenced to an exact multinomial distribution for very small sample sizes) and a test by Whitney (1978) yields a $\underline{t}$ value. Both of these tests were applied to the responses on each of the nine opinion items to aid in making decisions about the polarity of the subjects' sentiments. Table 7 includes these tests as well as the distributions of subjects' choices.

As can be seen from Table 2 subjects' perceptions of the treatment were clearly positive for all evaluation items regardless of which statistical test is considered. The program was judged successful in all of the dimensions considered in the questionnaire.

Table 2

Frequencies and Statistical Tests for Nine Opinion Items: Total Sample

Item Thrust	Response Frequency / %						z	t/df
	SA	A	N	D	SD	Miss		
Updating	36 17.6	94 45.9	41 20.0	16 7.8	5 2.4	13 6.3	7.2*	10.7* 191
Materials	51 24.9	88 42.9	47 22.9	4 2.0	4 2.0	11 5.4	9.1*	14.6* 193
Moderator	56 27.3	84 41.0	41 20.0	9 4.4	7 3.4	8 3.9	8.7*	12.5* 196
Presenters	79 38.5	99 48.3	17 8.3	0 0.0	1 0.5	9 4.4	12.9*	27.3* 195
Worked	50 24.4	94 45.9	24 11.7	26 12.7	3 1.5	8 3.9	8.2*	11.5* 196
Interact	66 32.2	97 47.3	19 9.3	9 4.4	3 1.5	11 5.4	10.9*	17.7* 193
Lent itself	60 29.3	103 50.2	17 8.3	13 6.3	2 1.0	10 4.9	10.5*	17.0* 194
Again	67 32.7	97 47.3	19 9.3	12 5.9	2 1.0	8 3.9	10.9*	17.5* 196
Others	70 34.1	92 44.9	25 12.2	5 2.4	5 2.4	8 3.9	11.0*	17.3* 196

Note. SA represents the most positive response.

*$p < .0001$

Subgroup analyses were also of interest. It may be that subjects in different programs, vocational education areas, school settings, work titles, or work statuses do not have equal opinions of their program. As well, attitudes may differ for those subjects whose site was one of the audio interactive bridge locations. To examine these possibilities, one-way analysis of variances were employed to test the null hypothesis of equivalence of response means for all six subject characteristic variables for each of the nine opinion items.

Rejection of these null hypotheses could occur because of differences between pairs of groups, or because of more complex linear contrasts as identified by a myriad of *post hoc* tests (Scheffe' was used). Interest, however, in this evaluation was only in discovering any group whose evaluation was significantly less positive than at least one other group. The question that was then addressed was whether this less positive group answered in a negative direction. Because of the number of hypotheses tested some consideration of the effect on type I error rate is mandatory. A liberal approach seems appropriate for this exploratory work therefore the "family" of hypotheses was seen as the nine evaluation items, therefore an approximate Bonferroni adjusted alpha of .006 (.05/9) was used in all hypothesis tests.

Out of all the six subject characteristic variables, only in the case of contrasting across the twelve programs was there a significant analysis of variance that led to identifying a significant pairwise difference between groups. Relevant statistics for the three evaluation items were: item 11, materials relevant [$F(11,181) = 4.03$, $p < .0001$], item 13, presenters credible [$F(11,183) = 4.10$, $p < .0001$], and item 18, encourage others to enroll [$F(11,184) = 3.78$, $p < .0005$]. Of particular interest is that in *each* case Scheffe' tests showed that the only significant pairwise group difference was between program #2 (Business 6/17) and a variety of other programs, with attitudes less positive for program #2. Moreover, setting statistical significance aside, the twenty-two subjects in program #2 had the lowest (least favorable) mean opinion on *all* nine evaluation items among all program groups.

The compelling question then is, although these subjects' opinions were less favorable than those of subjects in the other programs, were they unfavorable? Table 8 includes these subjects' choices and statistical tests.

As is clear from Table 3, the opinions of subjects in this program were indeed less positive. The only case in which an opinion might be declared positive was mixed, with what might be considered a significant z and nonsignificant t. Although with this limited number of subjects statistical power suffers, it is important to note that for none of the items was the opinion of these subjects in the *negative* direction. This is clear from both statistical inferential grounds as well as from a simple perusal of the distribution of choices within each item.

Tests comparing vocational areas, school settings, work titles, work statuses, and between those subjects at "bridge" locations with those not at such locations produced no similar differences. These variables are not seen to significantly moderate subjects' opinions.

Therefore, with the minor exception of program #2 subjects were very positive about their technical updating experience. Moreover, even for program #2 subjects were not negative concerning the experience; they were neutral. There are obvious limitations to the conclusions that may be made based on the subjects' opinion of the program. Other interesting questions include an objective assessment of the knowledge that they gained. However, a positive opinion about the process is a prerequisite. Clearly, therefore, the program can be evaluated as a success from these data.

Table 3

Frequencies and Statistical Tests for Nine Opinion Items: Business 6/17

Item Thrust	Response Frequency / %						z	t/df
	SA	A	N	D	SD	Miss		
Updating	1 4.5	2 9.1	10 45.5	5 22.7	1 4.5	3 13.6	.4	.6 18
Materials	0 0.0	6 27.3	9 40.9	2 9.1	2 9.1	3 13.6	.1	.1 18
Moderator	0 0.0	7 31.8	6 27.3	3 13.6	3 13.6	3 13.6	.2	.3 18
Presenters	0 0.0	12 54.5	6 27.3	0 0.0	1 4.5	3 13.6	1.7	3.1*
Worked	2 9.7	6 27.3	7 31.8	4 18.2	1 4.5	2 9.1	.7	1.0 19
Interact	1 4.5	12 54.5	4 18.2	0 0.0	2 9.1	3 13.6	1.7	2.4 18
Lent itself	1 4.5	8 36.4	6 27.3	3 13.6	1 4.5	3 13.6	.9	1.3 18
Again	0 0.0	10 45.5	4 18.2	3 13.6	2 9.1	3 13.6	.6	.8 18
Others	0 0.0	8 36.4	8 36.4	1 4.5	2 9.1	3 13.6	.6	.8 18

NOTE. SA represents the most positive response

*$p < .01$

References

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Ostendorf, V. (1989). Teaching Through Interactive Television: A Practical Introduction to Business Television and Distance Education. Virginia A. Ostendorf, Inc., Littleton, CO.

Whitney, D. R. (1978). An alternative test for use with Likert-type scales. Educational and Psychological Measurement, 38, 15-18.

1 a b c d e
2 a b c d e
3 a b c d e
4 a b c d e
5 a b c d e
6 a b c d e
7 a b c d e
8 a b c d e
9 a b c d e
10 a b c d e

DO NOT MARK OR WRITE IN SHADED AREA

VIDEOTAPED PROGRAM

PROGRAM EVALUATION
TECHNICAL UPDATING FOR VOCATIONAL EDUCATION TEACHERS USING DISTANCE LEARNING

Directions: Using a #2 lead pencil fill in the corresponding answer space for **each** item.

1. Which program are you viewing today?
   - a. (1) Agribus AG414
   - b. (2) Business BE153
   - c. (3) Business BE154
   - d. (4) Health HE331
   - e. None of the above

2. Which program are you viewing today?
   - a. (5) Health HE332
   - b. (6) Home Ec HO210
   - c. (7) Industrial IE595
   - d. (8) Industrial IE596
   - e. None of the above

3. Which program are you viewing today?
   - a. (9) Marketing ME154
   - b. (10) Public Svc PS061
   - c. (11) Technology TC103
   - d. (12) Technology TC102
   - e. None of the above

4. What is your vocational education area?
   - a. Agribusiness
   - b. Business
   - c. Health Occupations
   - d. Home Economics
   - e. None of the above

5. What is your vocational education area?
   - a. Industrial
   - b. Marketing
   - c. Public Service
   - d. Technology
   - e. None of the above

6. In what school setting do you work?
   - a. Elementary school
   - b. Middle school
   - c. High school
   - d. Adult/Vocational
   - e. Community college

7. What is your official school-related work title?
   - a. teacher/instructor
   - b. administrator/super.
   - c. counselor
   - d. Occupational spec.
   - e. other

8. What is your official school-related work status?
   - a. full-time
   - b. part-time

9. Is your site one of the audio interactive "bridge" locations?
   - a. no
   - b. yes

10. Participating in this program assisted me in achieving the goal of technical updating of the topic listed.
    - a. Strongly Agree
    - b. Agree
    - c. Neither Agree or Disagree
    - d. Disagree
    - e. Strongly Disagree

OVER

SCANTRON® FORM NO. 20-S-WS

3 5

11 a b c d e
12 a b c d e
13 a b c d e
14 a b c d e
15 a b c d e
16 a b c d e
17 a b c d e
18 a b c d e
19 a b c d e
20 a b c d e

DO NOT MARK OR WRITE IN SHADED AREA

11. Program materials handed out were relevant to the presentations.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

12. The program moderator generated enthusiasm during the session.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

13. The program presenters demonstrated credibility as instructors.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

14. Generally the technology worked well at my site.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

15. People were encouraged to interact with the moderator/presenters during the program.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

16. This program lent itself to the use of satellite teleconferencing technology.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

17. I would participate in a satellite teleconference activity.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

18. I would encourage others to enroll in future satellite teleconference activities.
    a. Strongly Agree d. Disagree
    b. Agree e. Strongly Disagree
    c. Neither Agree or Disagree

Comments/Suggestions for improvement:

Participant return to: On-site program facilitator

On-site facilitator:
Enclose All evaluations for each satellite program in one large envelope, mail immediately to:

Dr. John D. Morris
Evaluation Component
Distance Learning Project
College of Education
Florida Atlantic University
Boca Raton, FL 33731